

FEBRUARY 1959

Brick & Clay Record

LEADING CLAY JOURNAL
OF THE WORLD

BRICK • REFRACTORIES • STRUCTURAL TILE • SEWER PIPE • DRAIN TILE • TERRA COTTA • ROOFING TILE • CLAY AGGREGATE



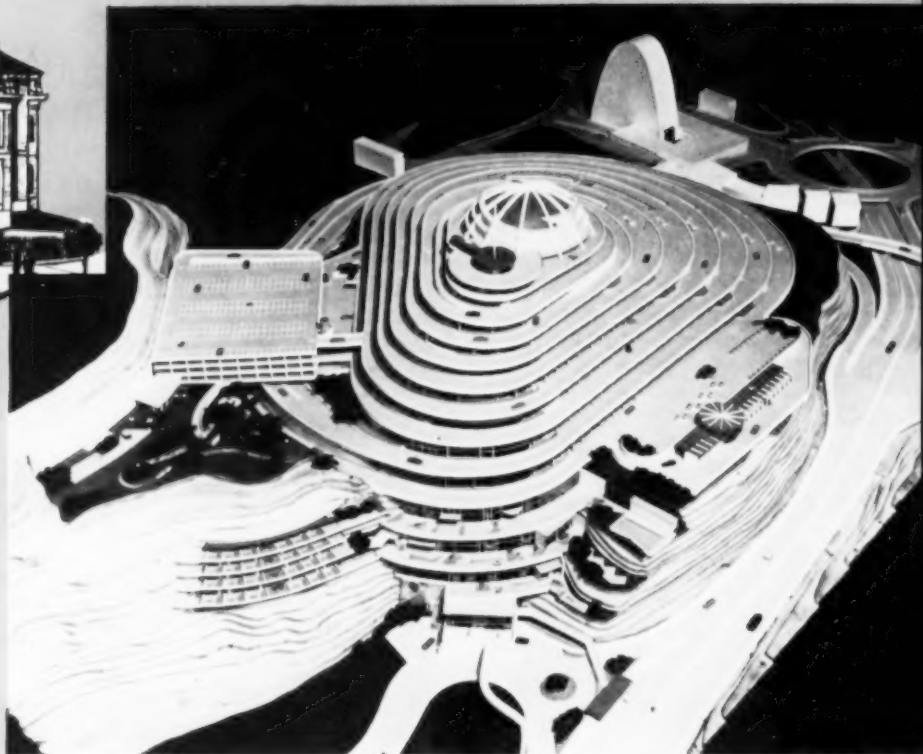
**HOW
HENDERSON CUTS FREIGHT LOSSES**

See Page 48



Overlooking Caracas, Venezuela, this "spiral in space" will be ready for use in 1960; built at an estimated cost of \$25,000,000. It is 10 stories high on one side, 25 on the other—covers 25 acres of mountain-side. It will include 320 stores, hotel, swimming pool, children's park, 7 theaters, business offices, garages, its own closed TV circuit and in the dome, a Great Hall for International Trade Fairs. Architect Sr. Jorge Romero Gutierrez makes skillful use of clay products in his dazzling white "Helicoid."

PHOTO COURTESY HAMILTON WRIGHT



Bonnot..... **PACES PROGRESS**
to assure.... **PRODUCTS**
that insure.. **PROFITS**

From brick for leading buildings many decades ago (produced in the very first Bonnot extruder . . . to clay units for the super-modern "flying saucer" business center in South America . . . Bonnot engineering paces the industry with processing equipment that provides products to meet the most exacting specifications of their time.

Such "specifications" include precision brick and tile. But more importantly, right now, there must be machine room performance that safeguards profits by assuring "maximum production at minimum cost."

Raw material to manufacturing—whatever your toughest production problems, Bonnot's advanced engineering is available . . . in your plant or our Canton Laboratory. Your inquiry gets prompt, experienced action at Bonnot. And without obligation. You're invited to call or write today.

- CRUSHERS
- HAMMER MILLS
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- DIRECT FOUNDRY SERVICE



The **BONNOT** Co.

CANTON 2, OHIO

THERE'S

PROFIT

IN COLORED BRICK

Architects will pay for what they want—and what they want is color. There are three ways to color brick—with glass, with colored clay, with sand . . .

GLASS.

A ceramic glaze gives brick sparkling, brilliant color that gleams like jewels. Pemco will develop a ceramic glaze formula for your brick. Send pieces of fired and greenware.

CLAY.

Engobes coat bricks with velvety, matt-finish pastels. This is beauty that is new for brick—vastly desirable and very saleable. Send for a sample of dry engobe, ready to use. Just add water and spray on green brick.

SAND.

These coatings give brick a weathered look that architects admire. To make the sand adhere, or to improve the color, write to Pemco about Bricwite—with or without colored stain added.

RESEARCH AND A FLAME

PEMCO



Ceramic frits, inorganic pigments, vitrifiable glass colors BALTIMORE 24, MARYLAND

WHY DID PAYNE CHOOSE VARCO?



Varco Clay Storage Building
at Payne Brick Company,
Elgin, Texas

"Varco had the building that could give us clay storage at low cost, and they could erect it fast," stated O. L. Payne, president of Payne Brick Company. "It was just good business to go with Varco, and we're glad we did."

Give your plant protection against wet-clay down time
with a low-cost Varco clay storage building.

These sturdy, maintenance-free structures have been
proven throughout the brick and clay industry
and they can be erected on your foundation at
exceedingly economical cost.

Available in 60, 80, or 100-foot clear spans, the Varco
building is designed to handle any type conveyor
system up to a 24-inch belt, and can be
covered with aluminum or galvanized siding.



R. G. VARNER STEEL PRODUCTS, INC. P. O. BOX 781 • PINE BLUFF, ARKANSAS

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BRICK & CLAY RECORD

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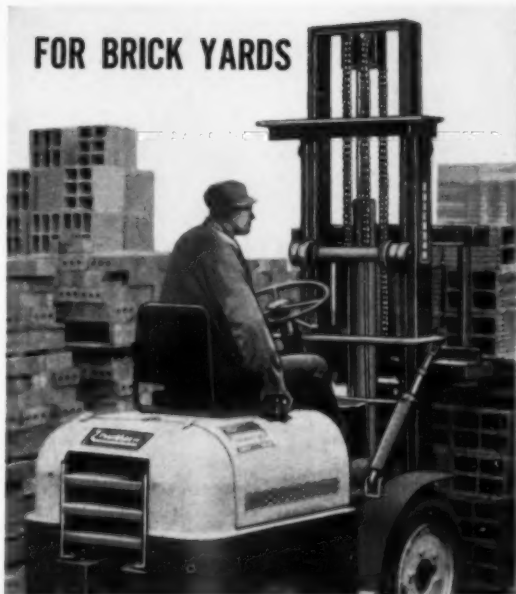
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BRICK & CLAY RECORD

5 South Wabash Chicago 3, Ill.

FOR BRICK YARDS



**SUPER TRACTION
 —HIGH CLEARANCE**

There are good reasons why an Erickson F-2W, of 2,000 lbs. capacity at 24" load centers—will out-perform any truck of its size in your brick yard.

First of all, there's power to spare in the Continental Y-112 (112 cu. in.) liquid-cooled engine used in this model.

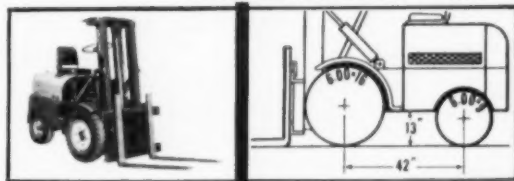
Next, Erickson gives you amazing traction no matter how soft or rough a yard may be, due to the big 6:00 x 16" drive tires on the F-2W (up to 77% bigger than others).

Third—A 42" wheel base applies greater ground pressure on drive wheels to assure good "ground-grip" when forks are empty.

Under clearance is 13" at center of truck. No trouble with ramps, bumps or rough ground.



THE WORKHORSE OF LIFT TRUCKS



The F-W Series is available in 2,000—3,000—4,000 and 6,000 lbs. capacity. Write for literature and name of your nearest Erickson sales-parts-service dealer.

ERICKSON POWER LIFT TRUCKS, INC.

269 St. Anthony Blvd. N.E. • Minneapolis 18, Minn.



Allied Engineering reports on precalcined, lightweight clay-structural blocks

For many years we here at ALLIED have propounded that structural-clay products must be made lighter in weight. We have also advocated the calcining of clay to overcome basic faults in traditional manufacturing methods. These problems arise from preforming the shape from crude clay, then firing at a finishing temperature to produce both an *accurate* predetermined size and a *satisfactory* finished surface and structure.

Production Advantages

All problems now experienced from drying and firing—such as shrinkage faults, unstable setting, shrinkage cracks, slabbing, pinholes, blistering, bloating, warping, black coring, red hearts or staining, popping, scumming and kiln marking—could be eliminated or greatly minimized with precalcined "body" materials.

Faster, safer firing cycles would result. Manufacturers would get much greater kiln production, almost quadrupled in some cases. Larger shapes and more complicated designs could be produced. (All of this has been proved in current production of certain refractories, porcelains and steatites.) Initial investment per unit of production would also be lower.

Sales Advantages

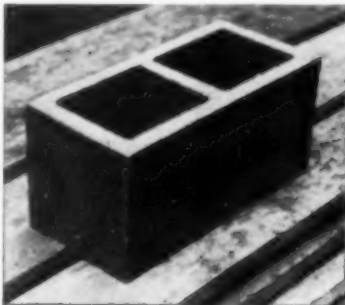
Beside major economies in production, these lighter weight clay-structural products would make possible other big savings for users. Freight or transportation costs, now a factor in considering the use of heavy-clay products, would be

greatly reduced. Likewise, supporting structures could be made lighter and cheaper. Finally, faster "lay up" of the products on the job would cut labor costs for builders. Together, these corollary savings *alone* could greatly change the marketing picture, bring into much wider usage clay-structural products such as backup brick, hollow building tile for walls and floors, roofing tile, ceramic panels for curtain wall construction and partitions.

Such was our thinking at ALLIED when we first heard about the *Burns Process* for making lightweight building materials. While sympathetic, even eager, we naturally approached it with due caution.

A Proven Commercial Product

We have now seen enough of the process and construction using the resulting products to accept it as completely practical for commercial production. The blocks, when made from a proper combination of ma-



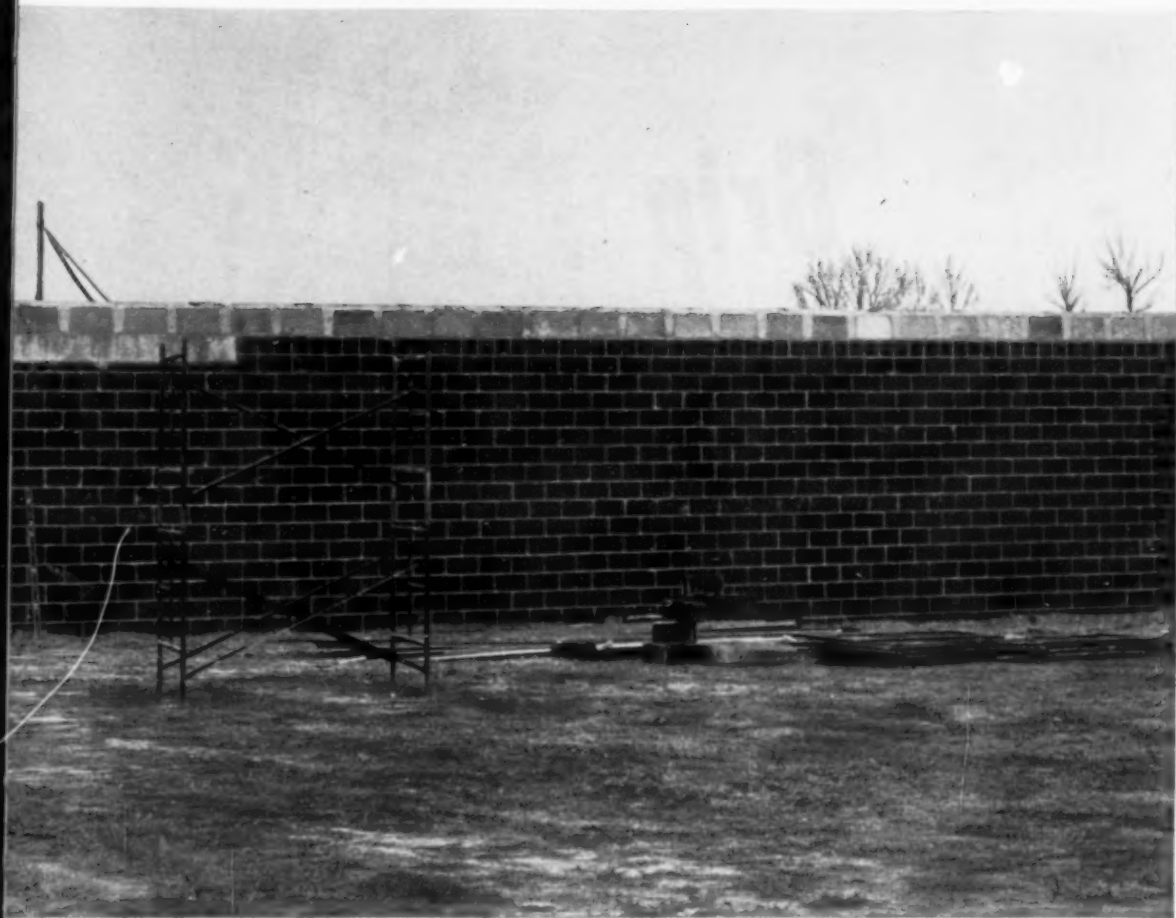
Please say "I saw it in B&CR"



terials, are excellent in quality. Moreover, they are comparable in cost with competitive load-bearing, fire-resistant building materials.

The *Burns Block* offers the following advantages:

- 1. Lightweight**—averaging 29 lbs. for the two-hole and 30 lbs. for the three-hole 8" x 16" block.
- 2. Economical to lay.** Contractors say they save up to 10 cents per square foot of wall compared to laying heavy-weight blocks.
- 3. Natural beauty** of vitrified clay products.
- 4. Highly fire resistant**—being fired at temperatures in excess of 2100° F.
- 5. Excellent acceptance** by architects and builders . . . and masons laying them are most enthusiastic.
- 6. Nailable.** Case-hardened nails can be driven into the block when utilizing furring strips or other



methods of attaching finished walls to the basic structure.

7. Takes paint readily and retains it. Blocks contain no lime or other alkalis. No efflorescence occurs under the paint or glaze.

8. High-compressive strength. Average load-bearing strength of the block is 1150 p.s.i. Minimum value reported is 965 p.s.i.

9. Low moisture absorption. The 24-hour cold water test on dry weight basis averages 10.6%; the 5-hour boiling-water test 15.8% average. The C/B ratio for face brick tested was 0.78; for the Burns Block 0.67.

10. Wet-dry dimensional stability. Tests of linear drying shrinkage from saturated block to dried block show:

Burns Block	0.0020%
Face Brick	0.0035%
Competitive-type Unfired Block	0.0288%

(Note that this last figure is *fourteen* times greater than the size variation experienced with Burns Block.)

11. Competitive. With all the above advantages, the Burns Block should capture a large share of the market now enjoyed by manufacturers of *unfired* competitive block. This ran *2.2 billion* (8" x 8" x 16") units in 1956, with a value of almost one-half billion dollars.

A New ALLIED Service

To help our friends and customers in the industry to properly evaluate the process, and possibly get into the business quickly, ALLIED Engineering has set up a special and comprehensive service. Here's what it involves:

Your raw materials and mix formulas will be carefully checked on a "lab" basis. If they prove adaptable to the process, a quantity will be put through the plant on a full commercial scale in actual production.

For these services a nominal charge will be made.

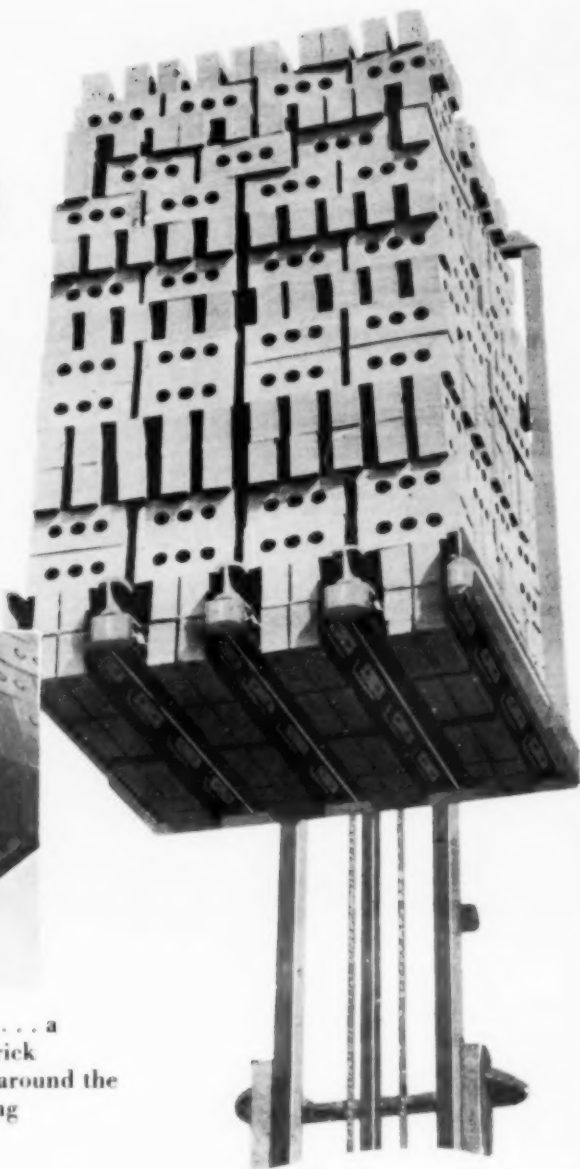
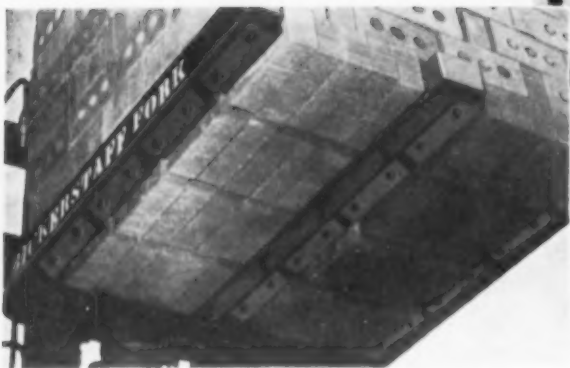
With production-proved samples at hand, the manufacturer can subject them to standard tests, also "feel out" his customers to determine the place such products would have in his particular market.

Once the quality of the product and commercial feasibility of the project has been determined, ALLIED will engineer and construct for the manufacturer a suitable facility to produce high-quality products at minimum costs, and with a minimum investment.

The Burns Block brings us all a great opportunity. Can we help you to be one of the first in the industry to cash in on it?

Write, wire or phone ALLIED Engineering Division, Ferro Corporation, 4150 East 55th Street, Cleveland 5, Ohio, or talk to your ALLIED Sales-service representative!

Grip and Go!



For speed, economy, safety and efficiency . . . a Bickerstaff Brick Fork sets the pace for brick moving. Progressive brick plant operators around the world are praising the time and labor saving qualities of the Bickerstaff Brick Fork. It eliminates the use of pallets, does the work of eight men with brick barrows. Saves time and labor. Increases profit.

- Reduces kiln load and unload labor time from 72 to 12 man-hours.
- Increases Kiln turnover 25%
- Loads directly from kiln to truck, freight car or inventory without rehandling.

Get the complete profit-making story.
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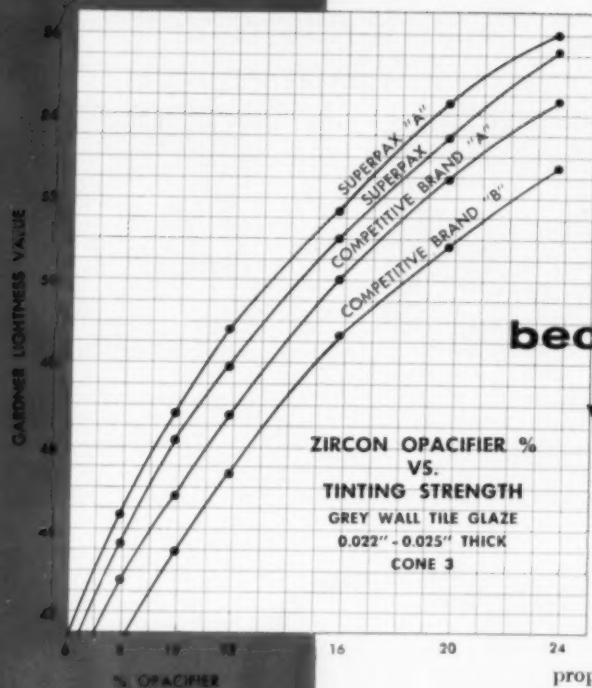
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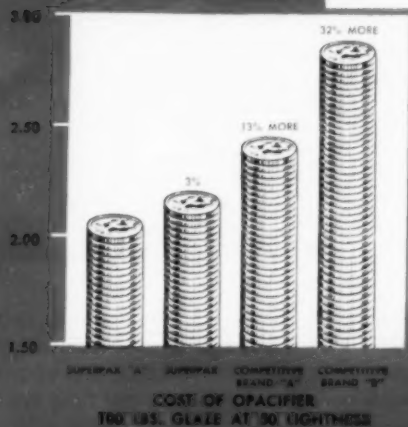


First Cost becomes secondary with these results

Admittedly, the price of a fine opacifier like Superpax A is and must be higher than the ordinary. Yet, its true cost to you, in actual use, is often lower. And at a lower price, SUPERPAX returns proportionate savings. The charted curves of the percent of Zircon opacifiers in relation to their respective tinting strength illustrates the point.

To reach 50 lightness on the Gardner scale, a smaller amount of SUPERPAX A is required. Even at the higher price, this means that Superpax A costs 13% less than competitive brand A and 32% less than competitive brand B. At lower first cost, SUPERPAX returns comparative savings. With savings like these, you can't afford to buy less than the best.

Your TAM field engineer can show you how these savings can be extended still further through a reduced reject rate and other means. Write our NYC office for details.



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- SUPERPAX
- ZIRCONPAX
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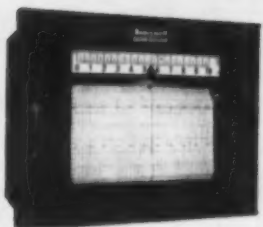
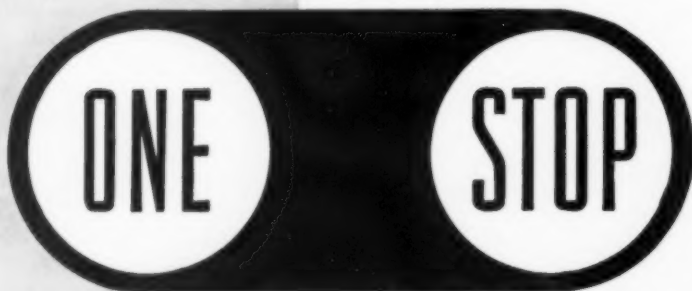
Radiation Detector . . . Responds to 98% of any temperature change within 2 seconds . . . high-speed model responds in half second. For applications from 200 to 7000F.



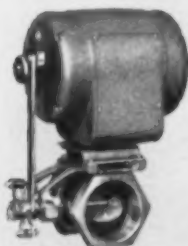
Millivoltmeter Pyrometer —Vertical Case . . . Available in a variety of electric control forms.



Integral Cam Programmer . . . Enables complete 1-to-24 hour program to be precast. Electric or pneumatic control on one or both pens.



Strip Chart Recorder—Single or Multiple Point . . . Records all types of variables. Choice of pen speeds and chart speeds.



Heavy Duty Electric Motor . . . For operating valves, dampers, louvers and other final control elements.

SHOPPING

Whether it's temperature, pressure, flow, or any other important variable you want to measure or control, Honeywell makes just the instrumentation for you. Our line of instruments is as broad as your requirements . . . you can choose exactly what you need.

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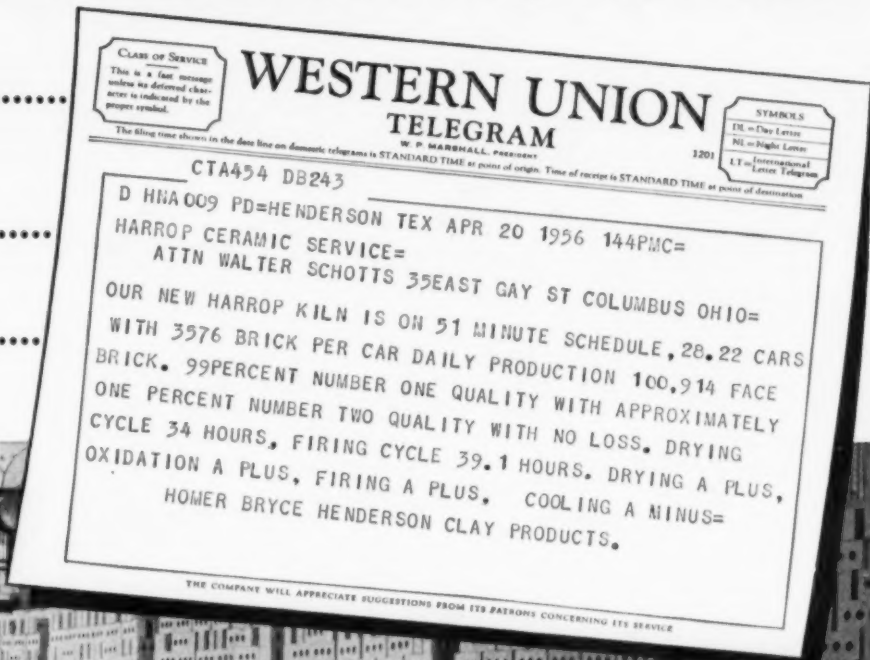
Honeywell



First in Control

Here's how HARROP KILN No. 3 performs at Henderson Clay Products

- ✓ 100,914 face brick daily
- ✓ 99% #1 quality
- ✓ NO loss



Latest Harrop Dryer and Kiln installation for Henderson Clay Products, Henderson, Texas. Twin Dryer is 184' long, Tunnel Kiln 421' long. Natural gas fired, with firing temperature approximately 2150°F.

Again . . .
Practical Ceramic
Engineering,
put profitably to
work in Tunnel
Kilns . . . Dryers
. . . Plant Design



Very probably Harrop can help *you* speed production and raise quality of whatever ceramic products you make. A non-obligating consultation on your proposed new installation will be gladly arranged.

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35 EAST GAY STREET COLUMBUS 15, OHIO

British Associate: British Ceramic Service Co., Ltd.,
Bricesco House, Stoke-on-Trent, England
Harrop Electric Furnace Division, 3470 E. Fifth Ave., Columbus 19, Ohio
. . . Laboratory, Industrial and School Furnaces

Accepted MORE and MORE by plants
wanting to save MORE and MORE!



PHOTO—Cloud Ceramics No. 2 Plant, Concordia, Kansas. This modern plant uses 7" x 8 1/2" x 19 1/2" PACO car tops on top deck; 4 1/2" x 8 1/2" x 8 1/4" PACO car tops, with light weight insulation, for perimeter.

PACO CAR TOPS

More and more tunnel kiln brick producers are finding they can reduce car top replacement costs as much as 50% with PACO! And, here's why PACO car tops last longer. They are made from the mineral pyrophyllite, a superior raw material. The result is a stronger, lighter weight car top that is highly resistant to thermal shock. PACO car tops do not have a softening point below actual fusing point, providing greater resistance to hot load deformation. The result is better, more efficient production. They are easy to handle and install, and simple to replace individually as needs.

There is a PACO engineer as close as your telephone — or write for complete information!

NORTH STATE PYROPHYLLITE COMPANY, INC.

Telephone BRoadway 4-7055 Greensboro, North Carolina



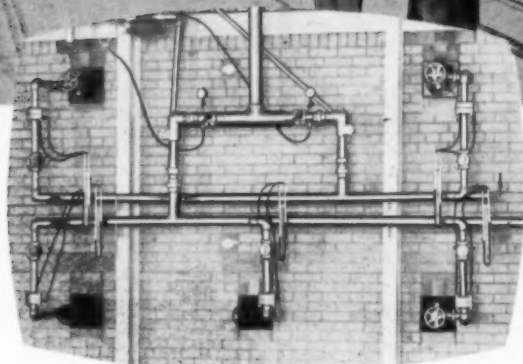
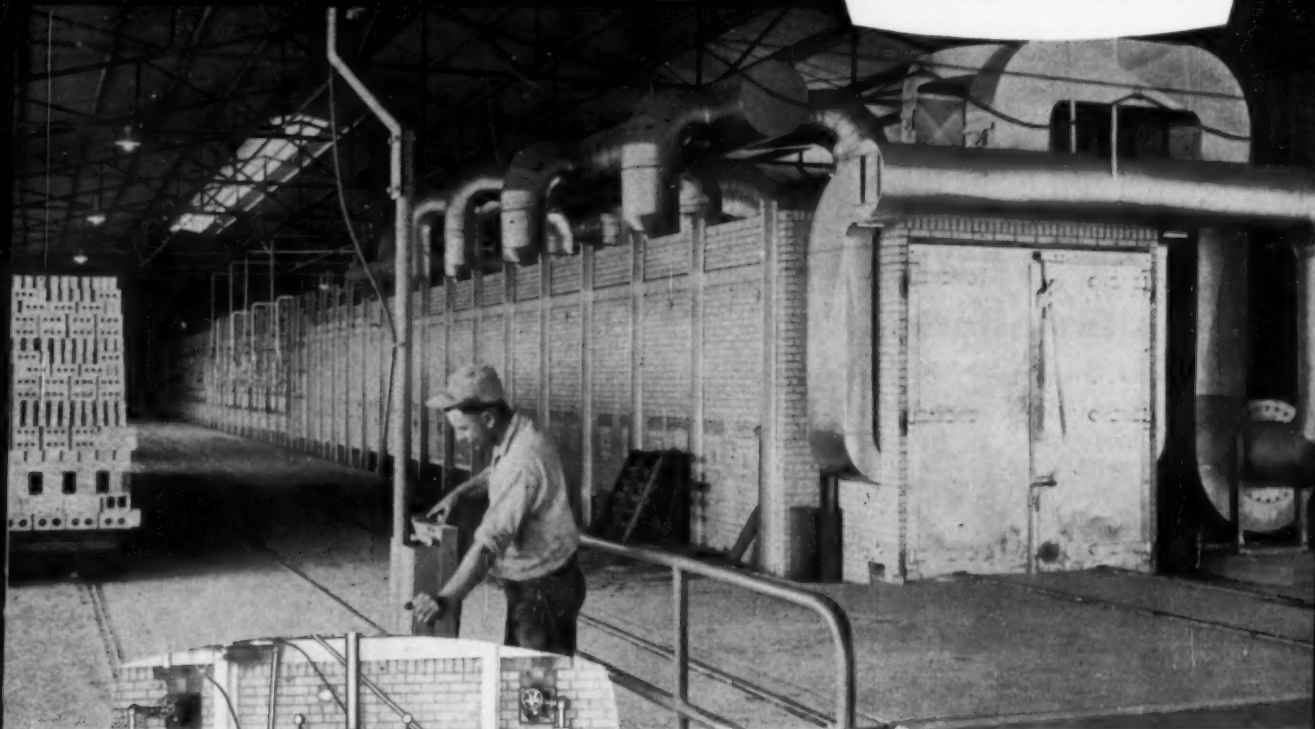
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Ceramic data book

- OTHER PACO PRODUCTS INCLUDE:
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 - PACOCAST
 - PACO H.T. CEMENTS
 - PACO FIRE BRICK MORTAR
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 - PACO FIRE BRICK
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 - PACO HEATZONE COMPOUND

An outstanding
multi-burner
kiln installation in **TEXAS**

for
**PAYNE
BRICK
COMPANY**



U-gauge readings show fuel input at each burner.

DRESSLER TUNNEL KILNS

Payne Brick Company's operation at Elgin, Texas is an impressive example of coordinated engineering for kiln, dryer and plant layout. Originally designed for a capacity of 40,000 bricks, the kiln is now producing over 60,000 bricks per 24 hours—a notable high in efficiency and economy.

The bricks are loaded onto kiln cars from an off-bearing belt. Cars then move to a 2-track, 167 ft Dressler-Robinson Dryer—Pre-heater.

After drying, the loads are placed directly in the 274 ft gas-fired Dressler *Multi-Burner* Kiln. The pre-heating and oxidizing problems inherent in the material are handled by atmospheric recirculation and excess-air type burners. The kiln has a total of 72 burners, divided into 6 groups for control. The fuel line feeding each burner is equipped with orifice flanges and plate, giving a manometer reading for easy burner regulation. • We will be pleased to consult on your forthcoming kiln and plant engineering requirements.

ENGINEERING SERVICE

Swindell-Dressler Corporation provides a complete engineering service for the ceramic industry in the design and construction of new plants, and modernization of existing facilities. Consultations arranged gladly on request.

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Designers and Builders of Modern Industrial Furnaces

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SAVE on First Cost

More air delivered per dollar. Performance of every blower scientifically tested and recorded.

SAVE on Installation Cost

3-point direct drive mounting prevents springing base. Compact NEMA motors save floor space.

SAVE on Operating Cost

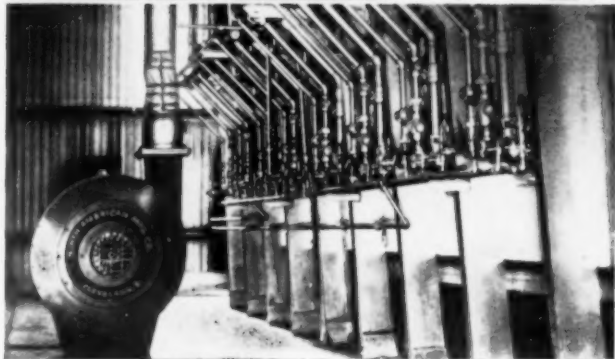
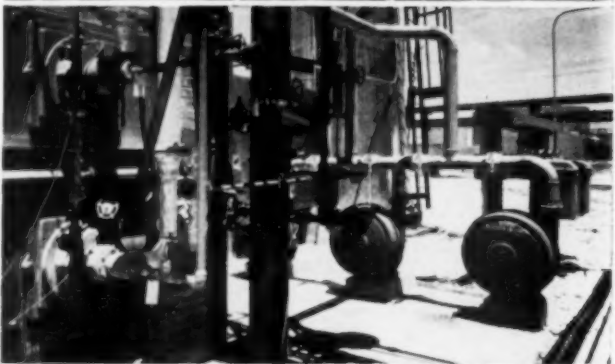
Vanes convert velocity pressure to static pressure gradually for best efficiency and reduced noise level.

SAVE on Maintenance Cost

Low bearing loads. Lightweight balanced impellers. High strength hubs. Extra sturdy frame and housing.

SIZES to fit your needs

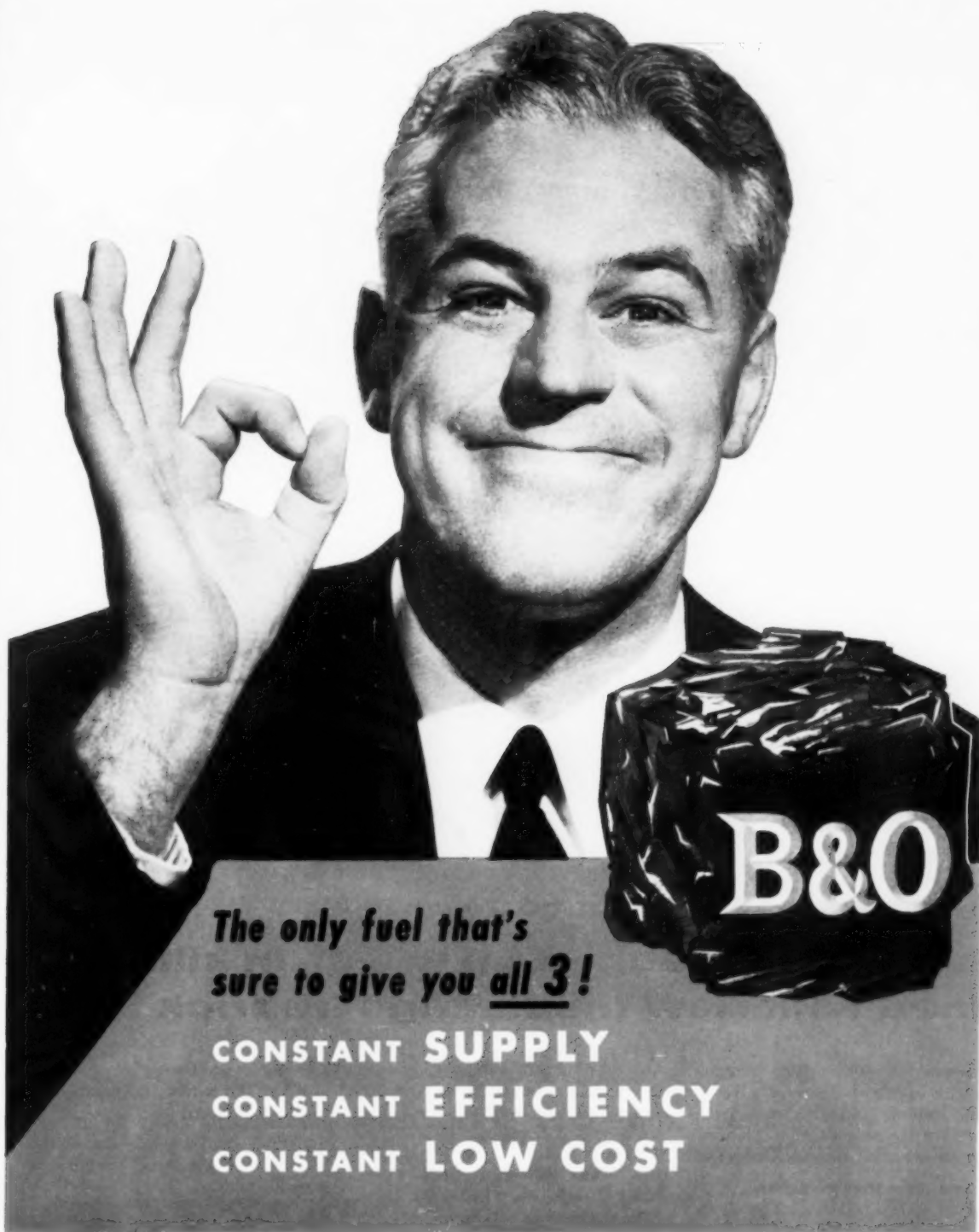
4, 8, 10, 12, 16, 20, 24, 32 and 44 ounces per square inch • 60 to 13,000 cfm • $\frac{1}{3}$ to 75 horsepower • 1800 or 3600 rpm • 4 Discharge Positions • Direct, V-belt, or Coupled Drive.



For engineering information,
call your nearby North American office or write for bulletin

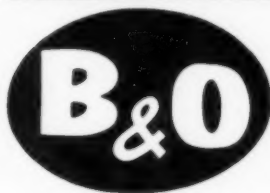


The North American Mfg. Co.
Cleveland 5, Ohio



**The only fuel that's
sure to give you all 3!**

CONSTANT SUPPLY
CONSTANT EFFICIENCY
CONSTANT LOW COST



BITUMINOUS COALS FOR EVERY PURPOSE

Ask our Man! BALTIMORE & OHIO RAILROAD, BALTIMORE 1, MD. Phone LExington 9-0400



ALLIANCE CLAY PRODUCT CO. reports:

Fuel costs reduced up to 23% in kilns lined with B&W Insulating Firebrick

A metered fuel consumption study of six kilns lined with lightweight B&W K-20 Insulating Firebrick was conducted by the Alliance, Ohio, plant of The Alliance Clay Product Company.

Here are the results:

- Fuel costs were reduced by up to 23% in circular kilns and up to 18% in rectangular kilns.
- Cycle time was shortened in both types of kilns.
- Salable ware was appreciably increased.

B&W REFRACTORIES PRODUCTS:

B&W Allmul Firebrick • B&W 80 Firebrick • B&W Junior Firebrick
• B&W Insulating Firebrick • B&W Refractory Castables, Plastics and Mortars • B&W Silicon Carbide • B&W Ramming Mixes • B&W Kaowool

As a result of this profitable performance, Alliance lined 23 rectangular kiln crowns and 2 circular kilns with B&W IFB.

Here's why *lightweight* B&W Insulating Firebrick slash fuel costs. They store and conduct less heat. Low heat storage permits quicker heating and cooling of the kiln, with less usable heat lost to the atmosphere. They also help step up production and cut cycle time, because they come up to operating temperature faster. Thus, the low

heat storage and thermal conductivity of B&W IFB reduce fuel input—and cut your fuel costs.

Bulletin R-43 gives helpful data on the use of B&W Insulating Firebrick in periodic kilns.

Send for your copy today.



**HERE'S YOUR ANSWER
to more profitable
brick production**



**Miller Cros-Flo*
Tunnel Kilns Use
CONTROLLED
SCIENTIFIC
Cooling For
High Production**

***Patent Applied For**

look to MILLER for the finest

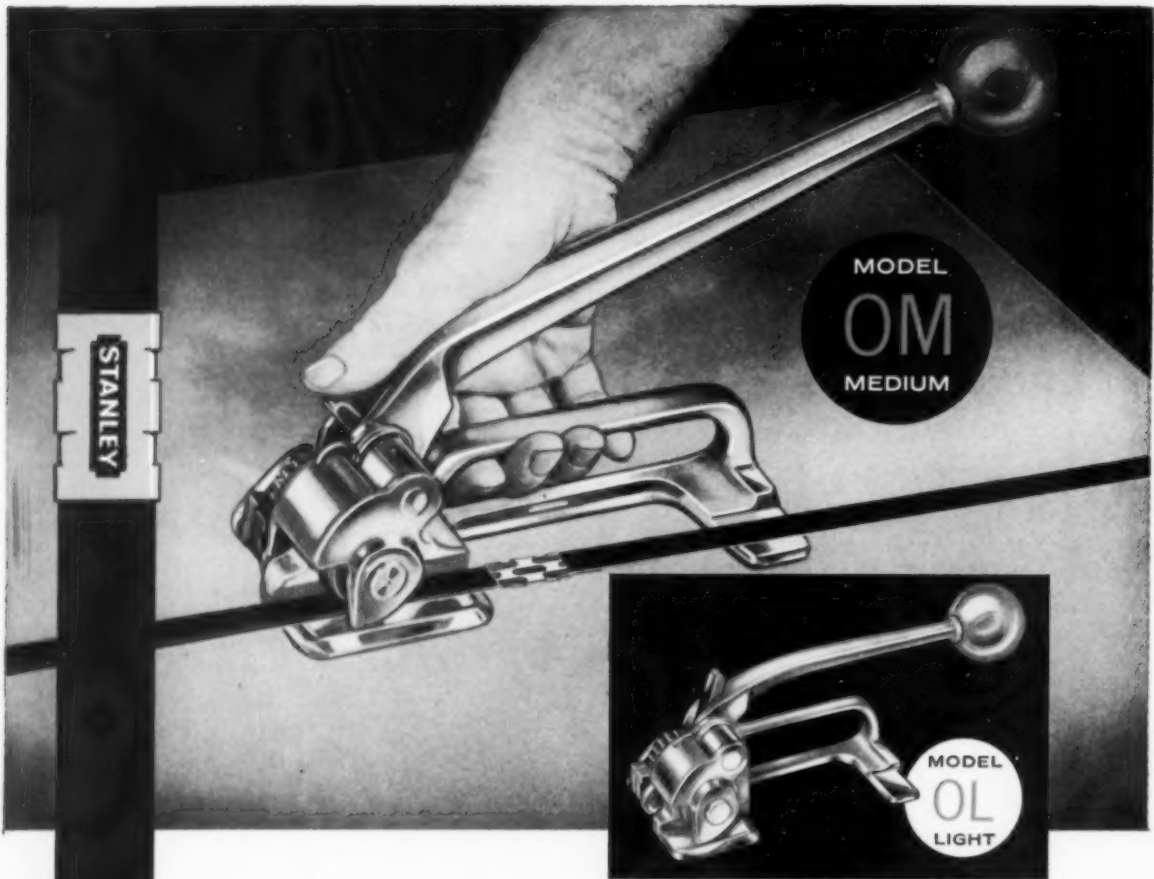
- CROS-FLO TUNNEL KILNS
- CONVEYOR EQUIPMENT
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NEW STANLEY TIGHTENERS

Versatile... Lightweight... Sturdy-

The Stanley O Tightener sets a new standard of efficiency for tensioning steel strapping to the required maximum with a manually-operated steel strapping tool with unlimited take-up.

The O Tightener is versatile . . . used to steel strap packages of varying sizes, shapes and weights. Operates with equal ease and speed in any position. Easy to handle, and requiring fewer strokes for take-up, it reduces operator fatigue and saves time. It's a strap-saver too! Applying seals behind tensioning wheel cuts overlap to minimum required for maximum joint security. Tightening action is more positive because there are two holding pawls on tensioning wheel. Removal from strapping is instantaneous. The operator returns tightening lever to down position and slides tool from strapping.

FEATURES

- Insertion, alignment of strapping is easy, quick.
- Light weight and balance assure handling ease.
- Sturdy construction means long life.
- Has unlimited take-up.
- Seals may be applied in front of or behind tensioning wheel.

MODEL OL 3	_____	3/8" STRAP
OL 4	_____	1/2"
OL 5	_____	5/8"
MODEL OM 5	_____	5/8" STRAP
OM 6	_____	3/4"

For more information, write STANLEY STEEL STRAPPING, Division of The Stanley Works, Dept. B, 1308 Corbin Ave., New Britain, Conn.

STANLEY INSURE IT - SECURE IT WITH STANLEY STEEL STRAPPING

AMERICA BUILDS BETTER AND LIVES BETTER WITH STANLEY

STANLEY

This famous trademark distinguishes over 20,000 quality products of The Stanley Works—hand and electric tools - drapery, industrial and builders hardware - door controls - aluminum windows - stampings - springs - coatings - strip steel - steel strapping—made in 21 plants in the United States, Canada, England and Germany.



RAY-MAN CONVEYOR BELT hauls heavier loads...lasts longer

Aggregate for concrete pipe is handled at a rate of 1500 tons per day on this Ray-Man Conveyor Belt at a large rock product plant. This heavy duty belt has the easy troughability and wear resistance required to handle fuller, heavier loads. Cushioned strength members give resilience to impact *plus* flexibility to train naturally. R/M's exclusive "XDC" Cover gives a degree of protection against wear, tear, cuts and abrasion not possible with ordinary belts. Balanced double compensation relieves outer ply stress to prolong service life. Ray-Man requires no breaker strip, holds fasteners far better than other constructions.

Like all R/M heavy duty belts, Ray-Man is moisture resistant and mildew-proof. Look into the advantages of Ray-Man Conveyor Belt for handling brick, clay and other bulk materials at your plant. Check, too, R/M's extra-cushioned Homocord Belt for unusually abusive shock loading conditions . . . and R/M Tension-Master where extra long lifts at high tension are required. Write for Bulletin M302.

**STRESS-RELIEF OF OUTER PLYS
MEANS LONGER BELT LIFE
"More Use per Dollar"**

CONVENTIONAL

27 lbs.
42 lbs.
58 lbs.
73 lbs.

COMPENSATED

18 lbs.
57 lbs.
77 lbs.
48 lbs.

CONTROLLED PLY ELASTICITY

Note how Double-Compensation at right equalizes ply stresses.

1. Center plies on neutral axis and better protected carry more load.
2. Outer plies stress-relieved by adjusting to tension and compression.

**INDUSTRY'S ONLY
COMPENSATED BELT**

Ray-Man Compensation relieves outer ply stress . . . allows outside ply to elongate more than inner plies as the belt flexes around the pulleys. Inner plies no longer "loaf", but carry full share of the load.

Outer ply is better able to absorb strain and impact of loading, pull as a strength member, *protect* the inner plies, hold fasteners or splice longer.

And, because Ray-Man is *double Compensated*—both top and bottom plies stress-relieved—Ray-Man Compensation prolongs belt life, even where operated over reverse bend, snub or take-up pulleys!

RM 502

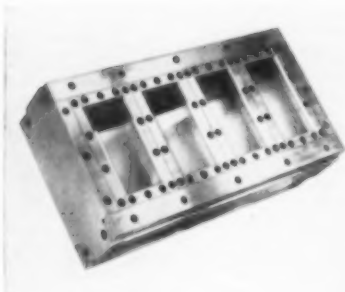
**BELTS • HOSE • ROLL COVERINGS • TANK LININGS • INDUSTRIAL RUBBER SPECIALTIES
MANHATTAN RUBBER DIVISION — PASSAIC, NEW JERSEY
RAYBESTOS-MANHATTAN, INC.**

Other R/M products: Abrasive and Diamond Wheels • Brake Blocks and Linings • Clutch Facings • Asbestos Textiles • Mechanical Packings • Engineered Plastics • Sintered Metal Products • Industrial Adhesives • Laundry Pads and Covers • Bowling Balls



NEW

EQUIPMENT



Mold Box

A new type of four cavity mold assembly is being made by C.B&W, supplied with liners made of Carboloy. One refractories maker has reported averaging 1.5 million brick using the Carboloy liners, as compared to previous service of 70,000 brick in old liners before removing the unit for re-grind. Die life is said to be 12 to 20 times longer than tool steel. Downtime can be reduced since assembly is handled as one unit when placing in press.

Chisholm, Boyd & White Co.
210/Circle on Reader's Service Coupon



Refractory Products

Robinson now makes the pictured line of kiln car and floor block, available in a wide range of mixes including two new ones designed to combat failures caused by excessive thermal shock. Above, from the left, are the "O" kiln car top, open end block for use in flat deck kilns; "U" kiln car top, perforated block for raised deck kilns; "I" beam block, for raised deck kilns; J-228 floor block for periodic kilns.

Robinson Clay Product Co.
211/Circle on Reader's Service Coupon

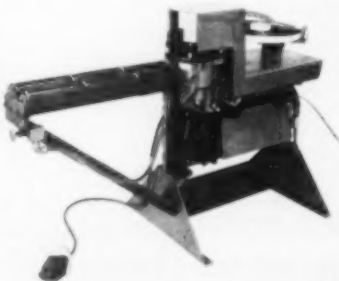
Hi-Lift Fork

Hyster is making a 3-stage Upright which is said to combine minimum upright height with high stacking ability. The unit can be mounted



on the Hyster 3000, 4000 or 5000 model trucks. The 3-stage unit has three separate sets of channels, one telescoping within the other. The unit was designed for work in areas of restricted overhead clearance. Available uprights range from 10' lift to 18'.

Hyster Co.
212/Circle on Reader's Service Coupon



Power Strapping

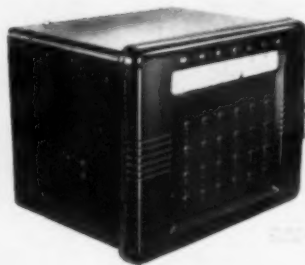
A new power-driven machine for fast steel strap application is being

Please say "I saw it in B&CR"

made by Acme with the model called the F4 strapping machine. In this unit, electrical and pneumatic power are substituted for manual effort, with each strap applied with the same tension, which can be adjusted by a dial on the control panel. There are no limitations on package size because of unlimited strap feed and take-up. Seals are fed from coils.

Acme Steel Strapping Co.

213/Circle on Reader's Service Coupon



Multi-Switch Indicator

A new Multi-Switch indicator, being made by Wheelco, is designed for rapidly checking temperatures at many points, with switching details that allow the instrument to be used for as many as 108 stations. The basic instrument, the 9000 series, is a completely self-contained, null-balance unit, requiring only the external sensing devices.

Wheelco Instruments Div., Barber-Colman Co.

214/Circle on Reader's Service Coupon

Pipe Glazing

Pemco has announced that they've revised their Technical Bulletin #5008 on ceramic glazing of sewer pipe. The bulletin now includes notes on glaze formulation, material cost estimates, application and firing.

Pemco Corp.
215/Circle on Reader's Service Coupon

Belt Conveyor Idlers

"Belt Conveyor Idlers," book 2716, is available from Link-Belt, containing detailed engineering selection data on five new series and 23 types of belt conveyor idlers, illustrating their versatility for a wide range of applications.

Link-Belt Co.
216/Circle on Reader's Service Coupon

BRICK & CLAY RECORD

Buying

Materials Equipment Services?

B&CR offers readers quick service for your inquiries concerning any of the keyed items in the New Products pages, on this card, or in the special information sections. You can also get additional, complete information on any advertisement in this issue.

All you do is circle the number of the editorial item or the page number of the advertisement on this card, and mail it to us.

CAR TOPS—Paco car tops are said to cut your replacement costs as much as 50% because they're lighter weight, stronger and highly resistant to extreme thermal shock, have great resistance to hot load deformation. North State Pyrophyllite Co., Greensboro, N. C.

162/Circle on Reader's Service Coupon

KILNS—Payne Brick Co., of Texas, is now using a new 274' Swindell-Dressler Multi-Burner tunnel kiln. Pre-heating and oxidizing problems of their material are handled by atmospheric recirculation and excess air type burners. Kiln has a total of 72 burners, divided into 6 groups for control. Swindell-Dressler Corp., Pittsburgh 30, Pa.

163/Circle on Reader's Service Coupon

SWISS-LOK—The 54,300 sq. ft. building for Logan Clay's new plant was erected in only five days time with the use of Swiss-Lok buildings. Buildings are designed to save 1/3 steel weight, need greatly reduced crane service, need no welding, cutting, bolting or riveting at the site. Swiss Fabricating Co., Pittsburgh 2, Pa.

164/Circle on Reader's Service Coupon

PIPE JOINTS—Plain End Couplings are available to pipe manufacturers on a royalty basis, in diameters from 4" to 24". Fittings assemble easily, are flexible, hold pipe in compression, not under tension. National Sewer Pipe Ltd., Oakville, Ont., Canada.

165/Circle on Reader's Service Coupon

TAM—Lot after lot, Tam is consistently uniform opacifier. Complete line includes Superpax A, Superpax, Opax, Opax S, Treopax, Zircopax, and double silicates. Titanium Alloy Mfg. Co., New York City.

166/Circle on Reader's Service Coupon

STEELSTRAPPER—Acme now has a new, fully powered A4 Steelstrapper that tensions, seals and cuts steel strapping automatically, all with air power; one hand controls. Acme Steel Co., Chicago 27.

167/Circle on Reader's Service Coupon

GREEN FIRE BRICK—A. P. Green Fire Brick Co. has 13 plants and warehouses throughout this country and Canada, with wide distribution helping to lower shipping costs, lower your inventory costs and help you maintain steady production. A. P. Green Fire Brick Co., Mexico, Mo.

168/Circle on Reader's Service Coupon

JOINT PRIMER—Chem-O-Sol has developed a new primer that weather can't break down. Primer is completely waterproof, activates over a wider range of pre-heating temperatures, sticks to a hot pipe immediately. Chemical Products Corp., East Providence, R. I.

169/Circle on Reader's Service Coupon

VARCO BUILDINGS—Payne Brick Co., of Elgin, Tex., chose Varco to build their clay storage building because of low cost and fast erection. Buildings in 60, 80 or 100' clear spans; can handle any type conveyor system up to a 24" belt; buildings are sturdy, with very low maintenance. R. G. Varner Steel Products Inc., Pine Bluff, Ark.

170/Circle on Reader's Service Coupon

CRUSHING COSTS—Reportedly can be cut in half with use of Williams heavy duty hammer mills. Machines can finish grind bank run clays and shale in single operation, including hard lime particles, iron pebbles, tailings. Said to save up to 75% of capital investment. Williams Patent Crusher & Pulverizer Co., St. Louis 6, Mo.

171/Circle on Reader's Service Coupon

Please send me more information concerning the items I have circled.

2-59

- 162 North State Pyrophyllite Co.
163 Swindell-Dressler Corp.
164 Swiss Fabricating Co.
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166 Titanium Alloy Mfg. Co.
167 Acme Steel Co.
168 A. P. Green Fire Brick Co.
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170 R. G. Varner Steel Products Inc.
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174 Robinson Ventilating Co.
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176 Engineering Associates, Inc.
177 Superior Supply Service Inc.
178 Sarjanian Glove Co.
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185 International Clay Machinery
186 Kimberly-Clark Corp.
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190 Chisholm, Boyd & White Co.
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200 J. C. Steele & Sons
201 Walter C. Stoll
202 Fate-Root-Heath Co.
203 Ludlow-Saylor Wire Cloth Co.
204 Rockfacer Co.
205 Besser Co.
206 American Clay Machinery Co.
207 W. S. Tyler Co.
208 Deister Concentrator Co.
209 Link-Belt Co.
210 Chisholm, Boyd & White Co.
211 Robinson Clay Product Co.
212 Hyster Co.
213 Acme Steel Strapping Co.
214 Wheelco Instruments Div.
215 Pemco Corp.
216 Link-Belt Co.
217 Houston Tool Co.
218 Schield Bantam Co.
219 Lima Electric Motor Co.
220 Pittsburgh Corning Corp.
221 Westinghouse Electric Corp.
222 Syntro Co.
223 Caterpillar Tractor Co.
224 U. S. Hoffman Machinery Co.
225 Allis-Chalmers Mfg. Co.
Page 2 Bonnot Co.
Page 3 Pemco Corp.
Page 4 R. G. Varner
Page 5 Erickson Power-Lift Trucks
Page 6, 7 Ferro Corp.
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Page 67 Hannon F. R. & Sons
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Page 68 Des Moines Glove
Page 68 Stoll, Walter & Son
Page 68 Tyler Co., W. S.
Page 69 Ceramic Color & Chem.
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Page 73 Fate-Root-Heath
Page 74 American Clay Machinery

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This Card Void After April 28, 1959



BRICK & CLAY RECORD

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Chicago 3, Illinois

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FIRST CLASS
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Chicago, Ill.

KAISER BUILDINGS—offer three cost saving advantages in aluminum roofing or siding sheet for your buildings: light weight, corrosion resistance and strength and durability. Kaiser can build your kiln buildings, clay storage sheds, etc. Kaiser Aluminum & Chemical Sales Inc., Chicago 11, or Oakland, Calif.

172/Circle on Reader's Service Coupon

BRICK MACHINES—and cutters by Chambers are engineered for high output. New 12AC brick machine, up to 300 hp., has all-steel construction and use of alloy materials to take care of today's standards and allow for tomorrow's more exacting extrusion problems. Chambers Brothers Co., Philadelphia 31, Pa.

173/Circle on Reader's Service Coupon

EXHAUSTER—The Robinson exhaustor has three features that make it tops for recirculating hot air, up to 1650°; integral self-cooling, cartridge type wheel assembly removable from drive side; and high temperature insulation between outer skin and inner casing. Robinson Ventilating Co., Zelienople, Pa.

174/Circle on Reader's Service Coupon

GLOVES—Gloves, hand pads and mittens protect workers hands, are flexible and comfortable to wear, made of finest cowhide. Des Moines Glove & Mfg. Co., Des Moines, Iowa.

175/Circle on Reader's Service Coupon

TRANSFERS—The EA hydraulic transfer car has smooth drive, sturdiness to move brick and clay products fast over a long period of time. Engineering Associates, Inc., Asheville, N. C.

176/Circle on Reader's Service Coupon

BRICK SORTER—Superior makes a brick sorter that can sort brick by one dimension, into any number of groups desired. Handles up to 3,000 brick per hour. Superior Supply Service Inc., Bessemer, Ala.

177/Circle on Reader's Service Coupon

PLASTI-KING GLOVES—Has seamless wing thumb, tough but fully flexible. Gloves are infra-red cured for greater resistance. Sarjanian Glove Co., Detroit 9, Mich.

178/Circle on Reader's Service Coupon

BONNOT CHALLENGERS—At Federal Seaboard Terra Cotta are handling an extremely wide range of assignments, including manufacture of a unit that weights 135 lbs., is 2' long by 17" high. The plant's general foreman says, "Learn how to control dies and the Bonnot extruder will do everything you ask of it." Bonnot Co., Canton 2, Ohio.

179/Circle on Reader's Service Coupon

DRILLING—Fast drilling with heavy duty, four speed auger, finger tip control, 65 hp motor, all drives mounted on Timken Roller bearings; three leveling jacks to insure straight holes. Paris Mfg. Co., Paris, Ill.

180/Circle on Reader's Service Coupon

PACK-HAULERS—Can increase your profits by cutting per-thousand delivery costs, allowing use of smaller fleets, savings on insurance, upkeep and licenses. Split load deliveries can be made. American Truck & Body Co., Martinsville, Va.

181/Circle on Reader's Service Coupon

FRITS AND STAINS—Hommel has the frits and stains you need for glazed brick or tile. Glaze frits and body, engobe and glaze stains are made to meet all requirements. O. Hommel Co., Pittsburgh 30, Pa.

182/Circle on Reader's Service Coupon

KILN CARS—McNally Pittsburg kiln cars reportedly stay in service longer because of such features as MacAlloy iron, stress relieved, and special bearings protected for long service. Cold rolled steel axles are said to need no lubricant. McNally Pittsburg Mfg. Corp., Pittsburg, Kansas.

183/Circle on Reader's Service Coupon

SUPER V-BELTS—By Gates have such special features as Flex-Weave cover for greater flexibility, longer life; concave sidewalls that allow uniform contact with sheave groove; oil, heat, weather resistance. Gates Rubber Co., Denver, Colo.

184/Circle on Reader's Service Coupon

INTERNATIONAL—Brick machines have adaptability to produce good product whether you're making brick, refractories, cored block, pipe, tile or special shapes, with machines that can save up to 25% in power cost alone. International Clay Machinery Co., Dayton, Ohio.

185/Circle on Reader's Service Coupon

ADDITIVE-A—Use of Additive-A allows tempering water to penetrate more easily, requiring less water. Other advantages reported are increased green strength, improved clay workability, reduced dryer losses. Kimberly-Clark Corp., Neenah, Wis.

186/Circle on Reader's Service Coupon

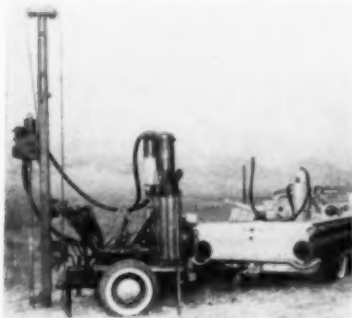
TUBE BORUM—Stoody's tube borium uses relatively coarse, ready-made tungsten carbide particles, rather than microscopic metallic carbides. What this means is that you can get one of the hardest, most abrasion resistant metals known for your hard surfacing work. Available in mesh sizes from 5-8 to 40 down. Stoody Co., Whittier, Calif.

187/Circle on Reader's Service Coupon

1 CIRCLE  **2 MAIL**  **3 RECEIVE**  **Free Product Information**
Numbers of Interest to You! This Card at Once!

Injector Drill

A new Hi-Vac injector drill will reportedly remove the cuttings from the drilled hole 6 different ways; drill



in any direction and in any kind of formation. Drill fits in pickup or any 4-wheel drive vehicle. Unit can remove cuttings by vacuum, reverse flow water, forced water, continuous flight auger, diamond drills by vacuum, drive coring.

Houston Tool Co.

217/Circle on Reader's Service Coupon



New Bantams

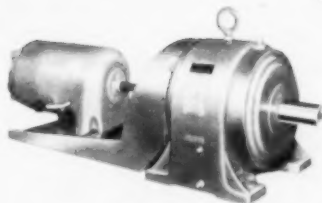
A re-designed line of carrier mounted, crawler mounted and self-propelled $\frac{3}{4}$ -yd. crane-excavators is now available from Bantam. Lifting capacities are 11 tons on the T-350 and CR-350, carrier-mounted and self-propelled, in order. The CR-350 is the one illustrated. Features of the models include new turntable design with a combination hook and trunnion roller design with fewer parts, better load distribution, less wear and maximum strength.

Schild Bantam Co.

218/Circle on Reader's Service Coupon

Gear Reduction

A combined gear reducer and gearshift drive unit, giving 4 or 8 speeds on the output shaft of the



gear reducer is being made by Lima. The line includes double and triple gear reduction units, with motor capacities from 1 to 10 hp. By moving the shift lever on the gearshift drive, four different output shaft RPM's are obtainable on the gear reducer.

Lima Electric Motor Co., Inc.

219/Circle on Reader's Service Coupon

Foamsil

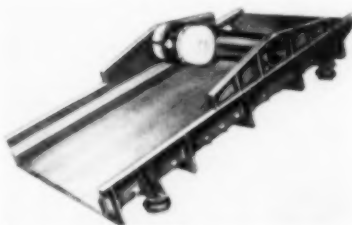
A four page folder describing the new "foam" insulating and refractory material, Foamsil, is available from Pittsburgh Corning Corp.

220/Circle on Reader's Service Coupon

Westinghouse Motors

A 27 page book, "Synchronous Motors and Controls" can now be had from Westinghouse. The book contains motor selector charts, application data, formulas, etc. Westinghouse Electric Corp.

221/Circle on Reader's Service Coupon



Screen

Syntron has announced development of a new "unbalanced motor" electromechanical vibrating screen for dry or wet screening of a wide range of materials. The screen will handle most materials ranging in size from 100 mesh to 3" lumps. In two models, the Syntron-Sinex screen is 4 x 6' in the SS-146 model; 5 x 10' in the SS1510.

Syntron Co.

222/Circle on Reader's Service Coupon

D8 Tractors

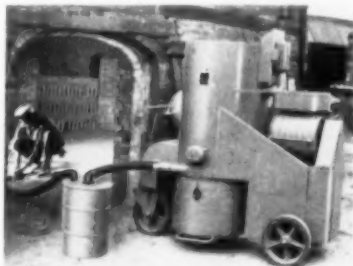
Two new D8 tractors, both with increased weight, horsepower and productive ability have been put in production. The two are the D8 di-



rect drive and torque converter tractors. Weight of each runs some 4,000 lbs. over the weight of previous models. Size of units, gauge, track ground contact and other items have been increased also, as has horsepower.

Caterpillar Tractor Co.

223/Circle on Reader's Service Coupon



Hoffco-Veyor

Two standard models are available of a new portable pneumatic system to move materials, with either unit able to be used as a vacuum cleaner if desired. Inlet valves take standard size $1\frac{1}{2}$ to 2" vacuum hose. Units can be wheeled to any part of plant, handle from 50 to 100 lbs. per minute either continuously or intermittently. Standard 55 gal. drums can be used as auxiliary collectors.

U. S. Hoffman Machinery Co.

224/Circle on Reader's Service Coupon

A-C Forks

Engineering and design features of the new A-C FT20, 2000 lb. lift truck are given in an 8 page booklet, #BU-B5, with specifications included. Allis-Chalmers Mfg. Co.

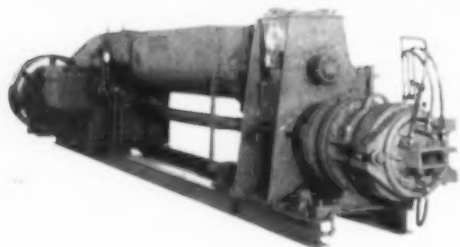
225/Circle on Reader's Service Coupon

Glen-Cery,

SHALE BRICK CORPORATION



IN THESE
Glen-Cery
PLANTS:



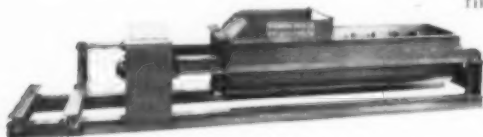
9 #11C or 12C Modern combined machines plus other older models.



10 Cutters featuring some of the latest Number 30 Series.



3 Air pressure controlled Pans plus fine grinding rolls.



8 #26 Pug Mills for maximum pug action.

For details, write
without obligation to:

- ✓ Ephrata
- ✓ Harrisburg
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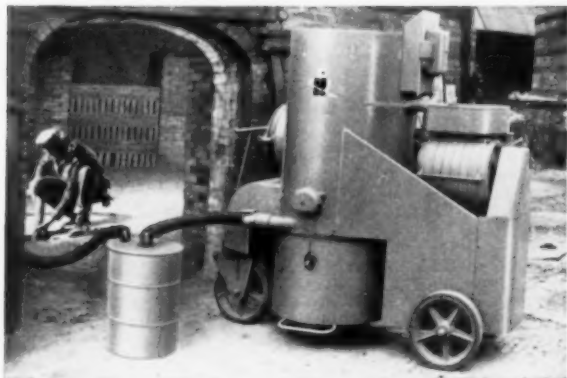
OVER 100 YEARS

CHAMBERS
BROTHERS CO.

1857 1959

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The Hoffman Report on Portable and Stationary Conveying-Vacuum Units



Product Contamination Solved with New Equipment

A proven solution to the continuing problem of good house-keeping in ceramics and related industries is now available through the use of portable and stationary pneumatic conveying-vacuum units. Wherever silica, talc, clay and other ceramic raw materials are used, it is possible to obtain considerable savings in reduced rejects with the elimination of product contamination. The units also provide for protection of semi-finished products, reclamation of valuable raw materials, reduced down time and cleaning costs, as well as increased health protection.

High Standards of Efficiency Set with Portable Hoffco-Veyor

Award Winning Hoffco-Veyor portable conveying units are a relatively inexpensive solution to material handling problems. For example, in a brick plant, a portable Hoffco-Veyor has trimmed costs as much as 80% and increased plant efficiency more than 20%. Comparable savings have been obtained in related industries. Many pick up and disposal functions in manufacturing and maintenance operations formerly handled manually are now the responsibility of Hoffco-Veyors. From either a fixed location or at various points in the plant, the one-man operated portable Hoffco-Veyor keeps materials moving rapidly to provide substantial time, labor and product savings. *Confinement of materials to the system during conveying prevents exposure to the atmosphere and insures good housekeeping at all times.*

A Competitive Advantage in Ceramics Material Handling

Veritable "work horses," portable Hoffco-Veyors handle a wide range of rugged duty jobs such as the conveying of silica, talc, clay, brick chips, rock granules, sand and a wide variety of ceramic materials. Hoffco-Veyors meet the toughest service demands with these advantages:

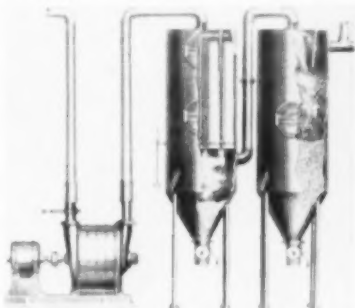
- ▶ Rapid pneumatic loading and unloading of hoppers.
- ▶ Higher production levels through reduced machine downtime.
- ▶ Easy maneuverability in crowded or virtually inaccessible areas.
- ▶ Can be hooked up to stationary piping for reaching remote areas.
- ▶ Compact construction assures dependable operation — minimum maintenance.
- ▶ Simple adaptor cover permits use of standard 55 gallon drums as collectors.
- ▶ Facilitates changeovers in mixed runs.
- ▶ No dangerous moving parts.
- ▶ Low in first cost.

Efficient Vacuum Cleaner

The portable Hoffco-Veyor is equipped with an inlet valve to take standard size 1½ to 2 inch vacuum hose for ordinary cleaning operations when not in use as a conveyor.

Vacuum Systems Operating from Central Location

Hoffman permanently installed stationary vacuum cleaning systems permit simultaneous cleaning operations throughout the plant with collection of material at one central location. Manual handling and disposal are eliminated. Heavy dust separators collect the material as large filtering areas insure thor-



ough cleaning of the air. Hoses for cleaning are inserted into strategically located inlet valves conveniently located throughout the area to be vacuumed. Stationary equipment prevents product contamination and cuts down time to a minimum. In addition, these versatile systems salvage valuable raw materials and encourage operating efficiency.

Kindly send the following
FREE booklets.

U. S. HOFFMAN MACHINERY CORPORATION

Dept. L5
Air Appliance Division
103 Fourth Avenue
New York 3, New York

- HV 101. How a Portable Hoffco-Veyor saves 80% labor costs and increases plant efficiency 20%.
- AB 100. How Stationary Vacuum Cleaning systems cut costs, increase plant efficiency.
- PB 500. How Stationary Pneumatic Conveying Systems cut costs, increase plant efficiency.

NAME TITLE

COMPANY

ADDRESS

4

**YOU'LL GET
4 TIMES
THE PRODUCTION
FROM THE
SAME MAN-HOURS
WITH
THE SMITH TURBINE-TYPE MIXER**



Here's the way to increase production of refractories mix without increasing either man-hours or space!

The Smith Turbine Mixer is a high-speed, compact, low-headroom mixer that has proved ideal for mixing all kinds of refractories: wet, dry press, fused, heavy clay, even lightweight.

Results show that mixing time is four times faster than with other mixers — sometimes even more! Blending is desirably uniform . . . there's no segregation or particle

breakdown of friable materials . . . coating, where desired, is fast, but balling is minimized.

The Turbine is low and vibrationless — doesn't need a costly supporting structure or base. It's the ideal way to squeeze maximum production out of valuable space.

Interested? Test data is available . . . or if you're hard to convince, we'll cooperate on a test program right in your own plant! Just call your Smith distributor, or write direct for fast action on this money-saving mixer.

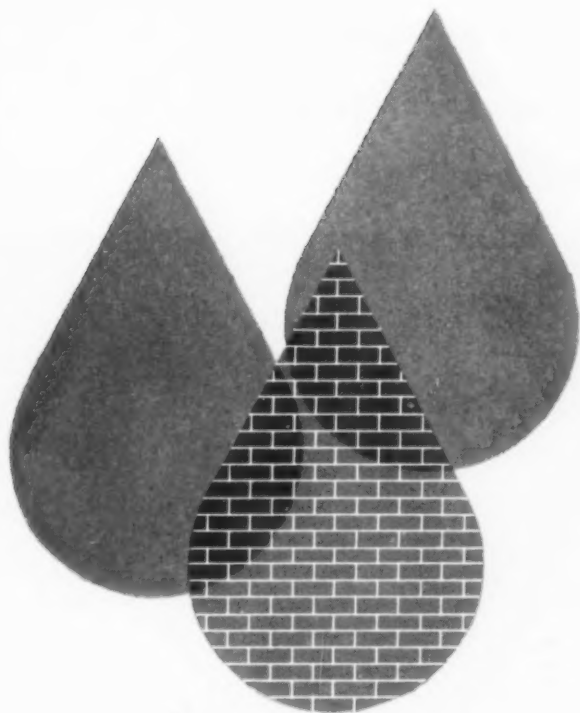
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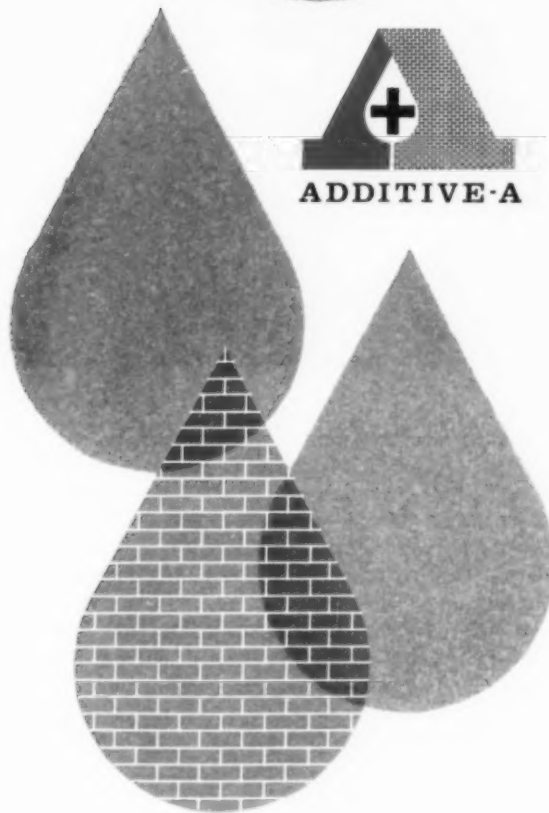
Since 1900, the pioneer designer and foremost manufacturer of the world's finest mixers

THE T. L. SMITH COMPANY Milwaukee 1, Wisconsin • Lufkin, Texas

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For even temper...
better textures
add
Additive-A
clay conditioner



Right at the start . . . at the pug mill . . . you can assure better brick production by adding Additive-A, a product of Kimberly-Clark Corporation. For here is where this hard-working clay conditioner helps most to produce more even temper, to smooth out your production rate and to reduce variation in textures.

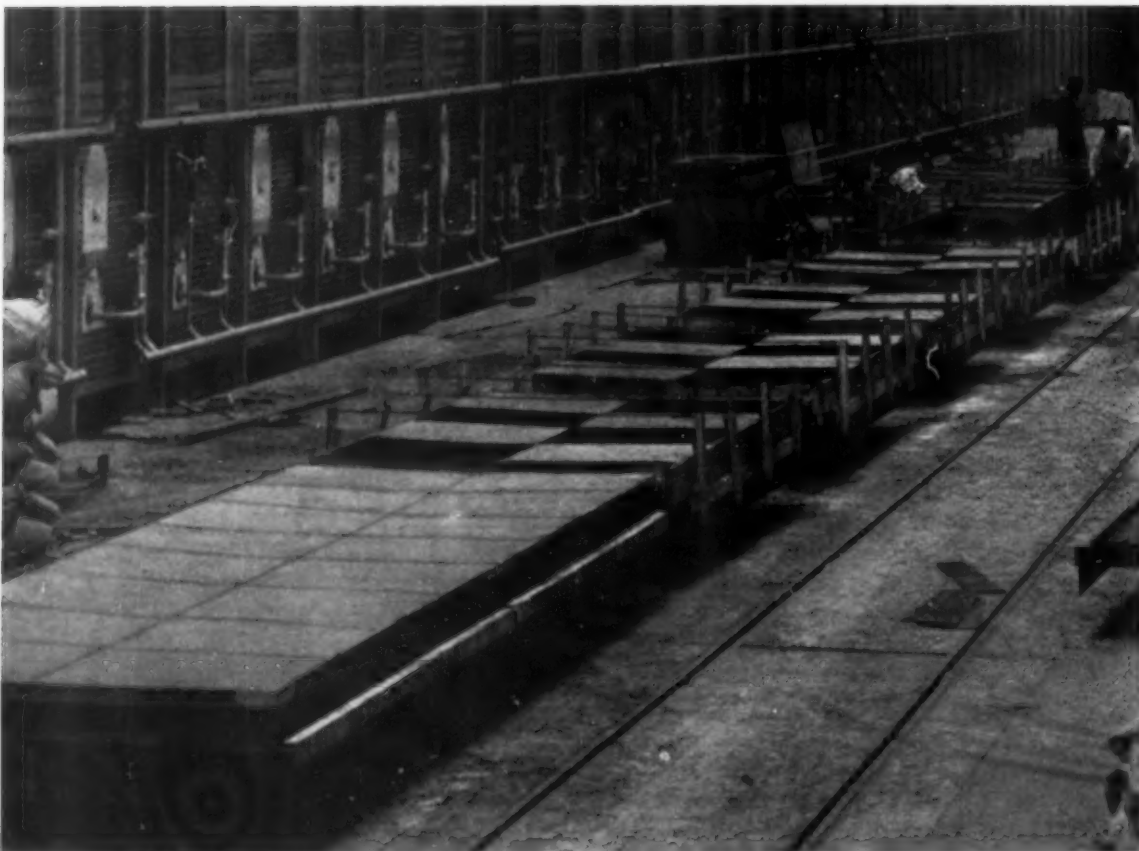
Extra benefits of Additive-A are:

- Increases green plastic strength
- Improves clay workability
- Upgrades the quality of all ware
- Aids water penetration
- Increases dry green strength
- Cuts dryer loss
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ADDITIVE-A is a trademark of KIMBERLY-CLARK CORP.

Write for descriptive folder, to: **Kimberly-Clark**  **Corporation** • NEENAH, WISCONSIN
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use refractory concrete made with
Atlas Lumnite Cement



Refractory concrete car tops being cast in place at Freeport Brick Company, Freeport, Pa.

These refractory concrete car tops are ready for a life of many firings. Cast in place with Lumnite calcium-aluminate cement, these tops will withstand high heat and retard the flow of heat down to the steel framework of the car. Lumnite cement offers unusually high resistance to thermal shock, with spalling and cracking minimized. And these refractory concrete car tops are easy and economical to install with plant labor and equipment. Concrete will reach service strength in 24 hours.

For added convenience and economy, use castables made with Lumnite cement. These are packaged mixtures, ready for use. Simply add water, mix and place. Made by leading manufacturers of refractories. For more information, write Universal Atlas, 100 Park Avenue, New York 17, N. Y.

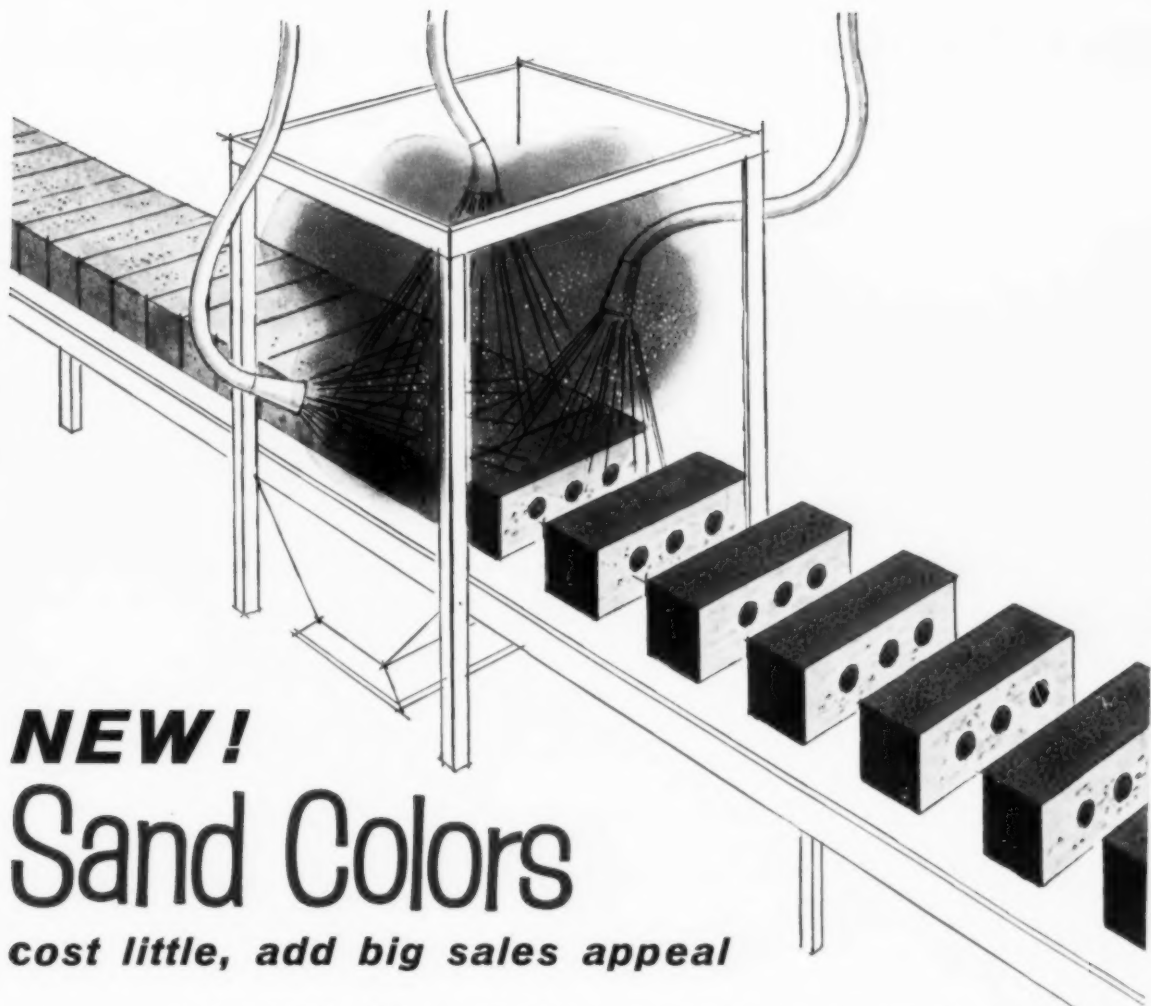
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NEW! Sand Colors

cost little, add big sales appeal

Architects and builders want *new* colors on brick. Now you can supply them easily, profitably. New, different Drakenfeld Sand Colors...

White	Gray	Blue
Pink	Green	Yellow

... can add salesmaking attractiveness to your brick at an average cost of only \$2.50 per 1000 bricks. (Cost may vary from \$1.00 to \$4.00, depending upon type of sand and desired depth of color.)

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New Drakenfeld Sand Colors do not segregate in the mix, are truly bright, and adhere solidly. They can also be applied in sand mold and sand roll-on processes.

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B&CR—OSU To Hold Meeting On:

Clay Bonded Block and Lightweight Aggregate

Research work on further development of a clay bonded block has moved rapidly in the past several months. Both B&CR and Ohio State University feel that there's a real need for an industry-wide presentation of knowledge gained to date by private research work in colleges and companies.

To show you how far work has gone, to show the direction research is going, B&CR and OSU are jointly sponsoring a meeting at Ohio State University on March 19-20, devoted to a series of reports on clay block and lightweight aggregate developments.

TOPICS WILL INCLUDE:

Henry Burns telling of his development work in the Burns Brick Block including how it's been received on the market.

G. C. Robinson, of Clemson, will report on research results and plant trials using Zonolite as an aggregate.

Arch Gmeiner, of Kimberly-Clark, will discuss organic binders, what they are and how to use them in making block.

Charles Goodman, of Chicago's Material Services Corp., will report on studies made by that company, and rotary kiln firing.

L. E. Pfeiffenberger, research director for ECSA, will discuss aggregate making by the sintering method.

Pressing, by dry press method or block machine, will be covered in talks by Bob Poole of Chisholm, Boyd & White and by Karl Nensewitz of Besser Co.

Other speakers will include Dean Tinker, of Ohio Kilns; Robert Taylor, SCPRF director; OSU men Dr. J. Otis Everhart, William B. Shook, Louis Vandergrift; J. J. Svec, B&CR executive editor and vice president.

For the first industry summary of research in LWA and clay bonded block, be sure to be at OSU on March 19-20. If you haven't received information and a registration card, write to Brick & Clay Record, 5 South Wabash Ave., Chicago 3, Ill.

Brick Record & Clay

February, 1959

Vol. 134, No. 2

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Established 1892.
now in 67th year.

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All For One

One of the most difficult promotional jobs tackled over the past few years has been that of promotion of clay flue lining by the Clay Flue Lining Institute. There are a lot of competitors for the CFLI members and they're having a tough time making headway.

In today's building market, there are many substitutes for clay flue lining. Not only are other types of lining being used but packaged chimneys are increasing in use; further, use of chimneys is of course declining with the lower number of fireplaces being built, as compared to some years ago.

Actually, there is no real substitute for clay flue lining. The product, a long-time standard for chimney building, actually will outlast anything else put into flues. It doesn't deteriorate; it can handle condensation better than metals or composition products; it operates well with any type of fuel, coal, gas, oil or wood.

It is clear, however, that promotion and advertising are necessary to keep this segment of the clay industry healthy and growing.

Only a few flue lining manufacturers have rallied to support CFLI in its fight to maintain a clay flue lining market. At present, there are 12 members.

B&CR believes that the CFLI cause is a worthy one, and that other manufacturers of flue lining should join the Institute to help promote and advertise this product. There are possibly 30 to 40 other manufacturers who make flue lining, even on a part-time basis. Their cooperation to put over this product would be welcomed.

This is an effort that should be supported by every manufacturer, whether clay flue lining is his whole business or just a part of it. It's good for the industry and the individual.

The Editors

NEWS OF THE INDUSTRY

Construction Begins At Henderson

Construction work on the new addition, announced in the last issue, was said to have begun on January 5 at Henderson (Tex.) Clay Products Co. Completion is expected by July 1.

The expansion will include a 421' tunnel kiln and two twin track dryers, each 184', with total cost estimated at about \$300,000 overall. Harrop Ceramic has the contract.

Texas Industries Buys Dallas LW, Plans Panels

Directors of Dallas Lightweight Aggregate Co. have voted to sell all assets of the company to Texas Industries, Inc., through a stock exchange. Dallas LW stockholders will receive three TI shares for each four of the Dallas LW shares. The plan has yet to be approved by Dallas stockholders, who'll meet Feb. 20. TI owns 51% of Dallas stock at present.

Dallas will continue to do business under the original name and management.

In another announcement, Texas Industries announced its entry in to

field of decorative architectural panels through purchase of the Texas-Louisiana division of Wailes Precast Concrete Corp. TI acquired Wailes' Texas plant in Dallas and rights to manufacture and sell Mo-Sai products in Tex. and La. Wailes will be operated as a TI division.

S. H. Nye Named What Cheer SM

S. H. Nye is the new sales manager for What Cheer (Iowa) Clay Products Co., replacing Robert D. Brown, who resigned. Mrs. Harry Carpenter was named assistant sales manager.

Plant Planned Near Vicksburg, Miss.

J. L. Collier, of Mississippi Brick & Tile Co., has announced that he's taken options on 130 acres of land east of Vicksburg, Miss., as the site for a proposed brick and tile plant.

The land is on both sides of the IC railroad tracks some two miles east of Vicksburg. Clay samples have been tested and a market study made by Collier. No further details were announced at the time.

Kaiser Talks On Merger With Mexico Refractories

Kaiser Aluminum & Chemical Corp. and Mexico Refractories Co. announced they are holding talks on a possible merger aimed at combining their refractories operations.

No details were disclosed, but negotiations are still in progress, according to an announcement from Kaiser Aluminum, which is headquartered at Oakland, Calif. Further details may be announced in the near future, a spokesman indicated.

The merger discussions also were disclosed by W. Basil Leach, president of Mexico Refractories, based at Mexico, Mo.

Kaiser's Chemicals division is a large supplier of basic magnesia refractories used by the steel, glass, cement and copper industries for high temperature applications. Mexico Refractories, not at present in the basic refractories field, is a supplier to industrial users of clay, silica and alumina refractories, as well as a variety of special refractory products. The product lines of the two organizations, the Kaiser announcement said, would supplement each other.

Pa. Plant Bought, To Reopen Soon

A brick plant south of Waynesburg, Pa., shut down for two years, has been purchased and will reopen soon. The new owners are William and Jacob Montgomery and Dr. James E. Conklin.

The plant, known as Green County Brick & Stone Co., will be operated by the Montgomerys. The six periodics will continue to be coal-fired but driers are being switched from coal to gas. Plant capacity has been about 25,000 brick with 20 men employed. Operation of the plant is planned for March, with red brick the product.

A. P. Green Div.

At a meeting Jan. 16, the board of directors of A. P. Green Fire Brick Co. declared the regular quarterly dividend of 25¢ per share of common stock, payable Feb. 17.

Reynolds To Spend \$2.5 Million in House Promotion



A nationwide, 160 city program to introduce aluminum "House of Ease" projects has been announced by David Reynolds, executive VP of Reynolds Metals Co. The program will see an investment of \$2.5 million by Reynolds alone during 1959, with a joint effort made by fabricators, aluminum building products dealers and others. The use of aluminum will cover everything from shingles to siding to gutters. A typical house is shown above.

PacClay Ione Plant Purchased by H-W

The sale of Pacific Clay Products refractories division, Ione, Calif., to Harbison-Walker Refractories Co. has been announced by PacClay president John D. Fredericks.

It was also announced that the election of Fredericks to the Harbison-Walker board of directors is contemplated at an early date.

Evidently the sale was made to enable Pacific Clay to concentrate on the sewer pipe operation, with three plants making the pipe. Fredericks said, "The monies will also be utilized to reduce the company's long-term indebtedness."

The refractories division of PacClay had been generally inoperative during the past year.

Cannelton Buys Control of Owensboro Pipe

Cannelton (Ind.) Sewer Pipe Co. has purchased controlling interest in the Owensboro (Ky.) Sewer Pipe Co., according to an announcement by Cannelton President Edward F. Clemens.

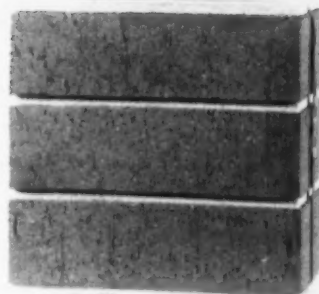
Owensboro will be operated as a separate organization but with coordinated sales efforts. Eugene C. Clemens has been appointed executive vice president; Norbert B. Honnigford, treasurer; Arthur J. Clemens, general sales manager.

Ceramo Completes Plant Additions

Ceramo Co., of Jackson, Mo., has completed their latest addition to their flower pot manufacturing facilities in mid-December, according to an announcement by Vernon L. Kasten, president. Completion of this work marks the end of the third major building program which began in 1952.

The new plant addition houses modernized crushing equipment. The new building includes screens and a new impactor.

Some 6,040 sq. ft. of manufacturing space and storage space was added, making the total now about 51,000 sq. ft. Louis W. Kasten, vice president, was in charge of building operations.



Evans Adds Wire Cut Velours

A new texture—wire cut "Velours"—has been added to the line of Tebco face brick made by Evans Brick Co., Urichville, Ohio. The line is reported to be an answer to demand for a brick between a smooth and matt texture.

The new brick is available in Majestic Gray, Imperial Gray, Tangerine Blend and other mixtures.

TRI Holds FO Meet in Columbia

The 10th Factory Operators meeting of TRI will be at the Tiger Hotel, Columbia, Mo., on April 2-3. Kenneth A. Rugh, president of Garfield Refractories Co., will be chairman.

The program will include tours of the Fulton plant of Harbison-Walker; the Wellsville plant of Wellsville Fire Brick; the Farber plant of North American Refractories.

Blitch, Welch, Named Merry Bros. Directors

Pierce G. Blitch and J. W. Welch, both bankers, have been elected new directors of Merry Brothers Brick & Tile Co., Augusta, Ga., at the annual meeting.

Directors re-elected were Harry C. Robinson, John B. Towill, P. Frank Robinson Sr., Dorräh L. Nowell Jr., William A. Faughman, Thomas R. Duncan, Ernest B. Merry and Kenneth H. Merry.

Pres. Kenneth Merry said that 1959 shipments are running well ahead of 1958.

Bryant Named Lehigh President

Joe A. Bryant has been elected president-general manager of Lehigh Sewer Pipe & Tile Co., Fort Dodge, Iowa. G. L. Avery was elevated to chairman of the board. All directors were re-elected with Mrs. Margaret M. Avery named a new director.

Other officers include vice president-secretary, George W. Thompson; John R. DeGroff, vice president sales; Neil F. Hinds, treasurer and office sales manager.

James F. Walter has recently been hired as ceramic engineer.

H. B. Chamberlin Dies

Hubbard B. Chamberlin, 79, director of Henderson Clay Products Co., Henderson, Tex., died in mid-December.

\$50,000 of White, Rockfaced Malvern Brick



A new multi-million Wolf & Dessauer department store in Fort Wayne, Ind., is using a white, rock-face Malvern brick with the brick and installation costing \$50,000, according to the architects. The brick is said to have been used on only one other such commercial building the Parker Pen building in Janesville, Wis. The brick was all hand chipped.

NEWS OF THE INDUSTRY

Western Brick Completes Ownership Transfer

John Mitchell, general manager, recently reported that the former Western Brick Co. will now be known as Western Brick Co. Division of Illinois Brick Co., Chicago.

Mitchell said dissolution of the company's charter as a corporation by the Illinois secretary of state completed transfer of ownership to the Chicago firm. The purchase was made some time ago.

Mitchell said no personnel or policy changes will take place. I. R. Cline will continue as president of the Danville division, with Harry Jones as secretary.

Region 6 Plans Masonry Process Clinics

Several SCR Masonry Process clinics have been planned by Region 6 for major cities in their area, according to Director Jim Neville.

The first two, Feb. 10-11, were held in Minneapolis, followed by a St. Paul meeting on Feb. 12-13. Other cities and dates tentatively planned are: Mason City, Feb. 24-25; Fort Dodge, Feb. 26-27; Des Moines, March 4-5 and Omaha, March 11-12.

Aimed at promoting use of the Process, the meetings are designed to present the information needed in a concentrated effort.

Dr. Blocher Heads Battelle Div.

Dr. John M. Blocher Jr. has been appointed chief of Battelle Memorial Institute's division of inorganic chemistry and chemical engineering. In his 12 years with Battelle, Blocher has done work in such fields as vapor-deposited refractory coatings, thermodynamics, etc.

Porter Names Fullerton, Fabianic

William D. Fullerton has been appointed assistant general manager, and William L. Fabianic named director of research at Refractories Div., H. K. Porter Co. The announcement was made by James P. Raugh, division vice president-general manager.



Fabianic



Fullerton

Fullerton, with Porter since 1957, has been assistant to the president. Fabianic will now handle research for all refractory products.

T. Kauffman Sr. Dies

Theodore Kauffman Sr., 92, chairman of the board of directors of the S. Obermayer Co. and Ramtite Co., Chicago, died January 14. He was the father of Theodore Kauffman Jr., president of the two companies.

The elder Kauffman served his firm for 62 years, having become associated with it in February, 1896. He was elected president in 1911 and served in that capacity for 44 years. He was elected board chairman in Feb., 1955 and was active till a few weeks before his death.

Porter Markets Shamva Multex Brick

A new refractory, Multex-85, a chemically bonded, high alumina refractory brick specially developed for the aluminum industry, is now being made and marketed by Refractories Div., H. K. Porter Co. Inc. Advantages of the brick are said to be that molten aluminum will not penetrate it, silicon pick-up is reduced, and the tendency of drosses and fluxes to adhere to sidewalls is reduced.

The product is made in Shelton, Conn., in all standard sizes and shapes.

Goodwin's Mason City Men At Sales Meet



Key personnel of the Goodwin Companies met at the firm's general sales offices in Mason City, Iowa recently. Pictured here, from left, are C. H. Koplen, vice president-sales director; C. R. Pearson, manager; A. C. Frisk, president; V. H. Fobes, sales manager; M. W. Lindquist, vice president-treasurer; J. E. Nelson, manager Twin City sales office; W. J. Goodwin Jr., secretary and a Goodwin director. Koplen, Pearson, Fobes and Nelson were all promoted to their above positions at the meeting.



Brown Retires From Glad, McB

Raymond H. Brown has retired as general sales manager of masonry products for Gladding, McBean & Co. Brown joined the company in 1937 as an estimator, draftsman and sales in the San Francisco office. He was made sales manager of architectural products for the San Francisco area in 1945, and in 1952 was promoted to the general sales manager.

Basic, Inc. Div.

Basic, Inc., of Cleveland, has announced dividends as follows: \$1.56 per share on preferred stock; \$1.40 per share on the convertible preference stock; 25c per share on common stock, all payable April 1 to holders of record of March 13.

CSI To Meet May 4-6 in Chicago

The 1959 National convention of the Construction Specifications Institute will be held in Chicago May 4-6, according to J. Stewart Stein, president. Exhibits and meetings will be in the Palmer House.

Golden Becomes Denver Division

Denver Brick & Pipe Co. has converted its wholly-owned subsidiary, Golden (Colo.) Brick Co. into the company's Golden Division. Denver B&P purchased Golden in 1954 and has modernized and expanded the plant, with present capacity of 100,000 brick per day.

ACS To Meet In Chicago, May 17-21

The 61st annual meeting of the American Ceramic Society will be held at the Palmer House, Chicago, on May 17-21.

W. H. Carroll Dies

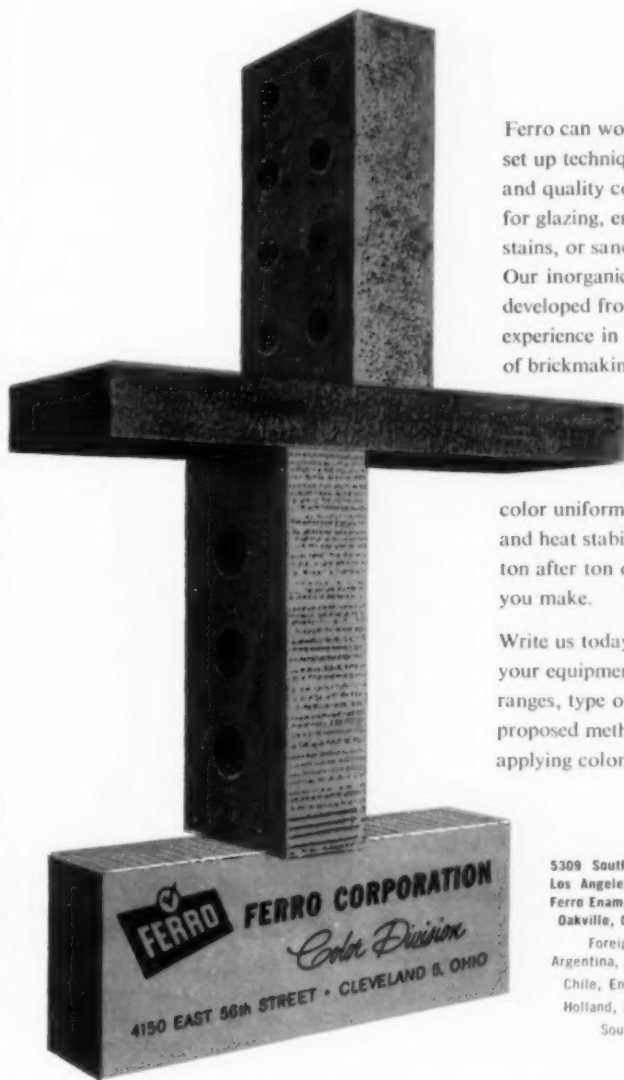
W. H. Carroll, 69, former sales manager of the old Athens (Tex.) Brick Co., died Jan. 1 after an extended illness. He was with the company from 1930 till 1946 when it was purchased by Harbison-Walker Refractories Co. In 1946 he was a

founder and organizer of Texas Clay Products Co. at Malakoff, with that company till 1952. Early in 1953 he founded Athens Brick Co. and was with this company, as first vice president and sales manager, until his recent illness.

W. E. Geib Dies

Walter E. Geib, 73, president of Fairfield Brick Co., Zoarsville, Ohio, died January 15 at Union Hospital in Dover. He had suffered a heart attack on January 5.

When you color Brick...



Ferro can work with you to set up techniques, processes and quality controls... for glazing, engobe, body stains, or sandblasting. Our inorganic colors—developed from long experience in all kinds of brickmaking—retain

color uniformity and light and heat stability through ton after ton of the brick you make.

Write us today, describing your equipment, firing ranges, type of clay and proposed method of applying color.

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Los Angeles 22, California.
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Foreign plants in
Argentina, Australia, Brazil,
Chile, England, France,
Holland, Japan, Mexico,
South Africa.

Solite Appoints Jones, Myer

Two new sales representatives have been appointed by Southern Lightweight Aggregate Corp., producers of Solite.



Jones



Myer

George W. Jones Jr. has been appointed representative for the new subsidiary, Florida Solite Corp., with offices in Jacksonville and plant in Green Cove Springs.

Thomas L. Myer is the new sales representative in charge of the Washington, D. C. area, with office in Bethesda, Md.

The announcements were made by A. Cabell Ford, sales director for the parent company in Richmond, Va.

'59 To See Start of Construction Growth

An expected 6% increase in the dollar volume of new construction next year should "Signalize the start of a new era of construction growth, along with a generally prosperous economy," according to William Dooly, public relations and publications manager for AGC.

Dooly said, "It appears that new construction stands a fair chance of reaching \$52 billion in 1959", comparing to Dooly's prediction of \$49 billion in 1958.

Malakoff Names Houston Distrib.

Texas Clay Products Co. has given exclusive distribution rights for Houston and surrounding area to Detering Co., of Houston.

Moving?

If you're planning to move, remember to arrange for BRICK & CLAY RECORD to follow you. We need at least six weeks notice in advance of your moving date if you want to be sure to avoid missing an issue. Send your change of address to BRICK & CLAY RECORD, 5 South Wabash Ave., Chicago 3, Ill. Be sure to give both old and new address, zone number, and your name.

N. C. Salesmen Back In School



When a group of salesmen already selling 10% of the Nation's brick voluntarily "go back to school" to study the physical properties of clay products, that's news! And that's exactly what more than 50 North Carolina brick salesmen and sales executives did for a 2-day session entitled "Know Your Product" held at Greensboro January 5-6.

According to some who attended, the subject matter in itself consisted of dry basic facts which should have been known by all; but it was the manner in which it was presented which kept the interest of even the

most experienced old timers present. As a result the "dry, basic facts" for the first time now have a real meaning to many N. C. brick salesmen.

After a review of the specifications by Southern Brick & Tile's Jim Lee of Atlanta, an authority on the subject, the entire group was transported by bus to a laboratory to see what the specification terms are all about.

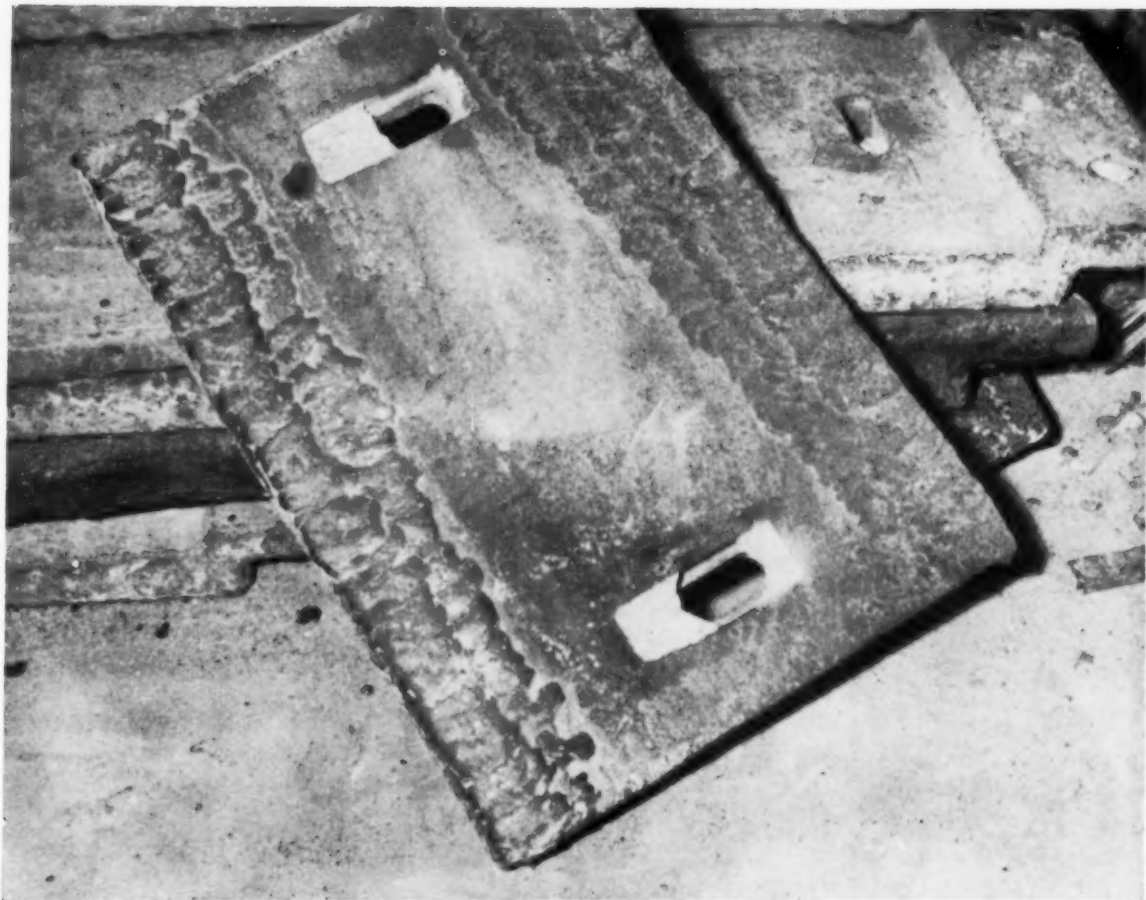
This trip was not the usual "Laboratory Tour" either. To the contrary, Pittsburgh Lab's Greensboro manager W. A. Bradley had his staff prepared for a full-fledged demonstration of all the more important physical tests on masonry units and mortars, including some improvised investigations not in the book. The salesmen saw with their own eyes not only the usual compressive strength and modulus of rupture tests, but also such interesting items as prism and steel pull-out tests (both important in RBM work); moisture expansion measurements; comparative strength tests of different mortar types; and a host of similar lab investigations.

Later the staff of Brick & Tile Service, sponsors of the meeting, explained relationship of the physical properties to building code requirements, structural design, and building performance.

Robinson Supt. Saluted for 45 Years Service



Frank W. Black, right, is here presented with an award for his 45 years of service; Black is superintendent at Factory 10 of Robinson Clay Product Co. A 20 year service award was given by President W. E. Robinson to R. H. Anderson (left), director of research and development. At the award ceremony, 12 employees were honored for a total of 185 years of service.



3 to 10 Times More Muller Plow Life

That's the record after hard-facing with Stody Alloys!

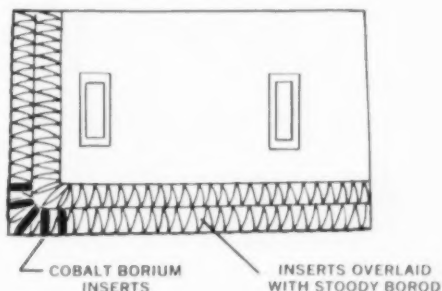
Muller plow life in clay plants over the nation is variable... greatly dependent upon type of material being handled. Yet under any operating condition, Stody hard-facing at least *tripled* normal life and with special hard-facing treatment, *gave an increase of 1000%! Here's how it was done.*

The muller plow illustrated above was given two heavy wash passes of Stody 121 on edges and over the wearing face. Application was made by the semi-automatic welder. This treatment gave a 3 to 1 increase in life at nominal hard-metal and labor costs.

Where abrasion is more severe, even better protection is normally afforded by applying Stody 121 to the face and protecting the wearing edges with Stody 130 or Borod, tungsten carbide materials.

Under extreme abrasion, involving sharp cutting silica sand, a few Stody Cobalt Borium inserts on the corner of the plow provide maximum wear resistance, retaining shape and size in these critical areas. (See sketch.) The inserts plus the entire wearing surface are overlaid with Stody Borod. This application lasted 10 times longer than normal for standard unprotected plows.

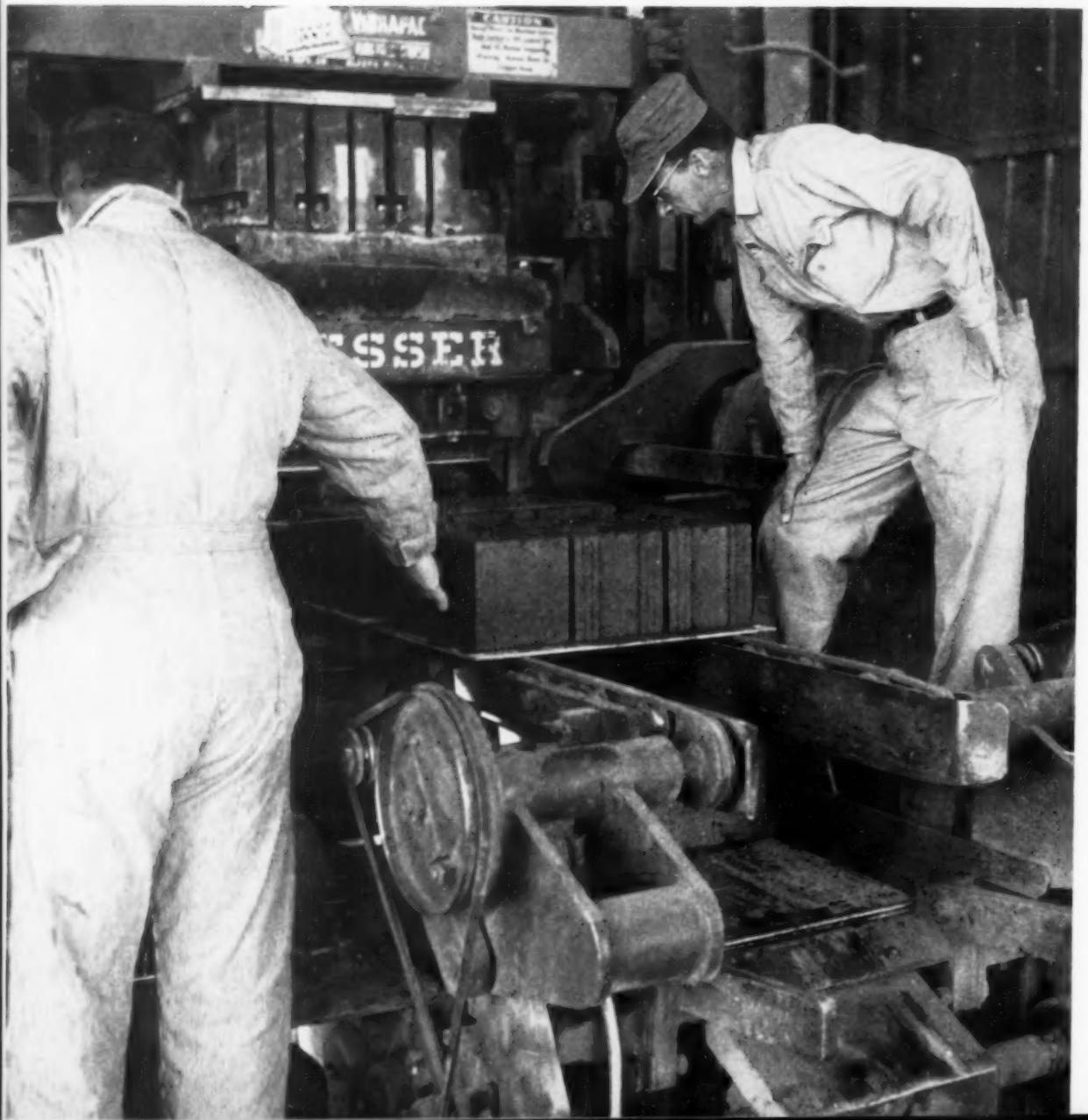
For more details on this and other wear problems, see the Stody GUIDEBOOK. Your Stody Dealer (over 600 in the U.S. and Canada) has a copy for you. Check the "Yellow Pages" for your nearest dealer or write direct to the company.



STODY COMPANY

11950 East Slauson Avenue • Whittier, California

Clay Bonded Block



Report on research at Clemson College in machines and methods; dry, wet pressing and slurry casting in development of this new product.

By
G. C. Robinson
Clemson College

Lightweight structural units have long teased the imagination of ceramic manufacturers, but their accomplishment has been beset with many troublesome obstacles. Recent pilot tests made by the Zonolite Co. has indicated that many of the troubles can be overcome by making fired blocks from mixtures of clay and vermiculite.

The tests have indicated that block can be prepared that weigh only 20 pounds and still have crushing strengths in excess of 1000 psi over the gross area of the block. The vermiculite can be added to lighten any kind of aggregate, even at as low a rate as 1 or 2% of the aggregate.

There are many questions still to be answered, and attempts are being made to obtain the answers through pilot production of full-size units using four different forming methods: 1) Vibrating Block Machine; 2) Slush Casting; 3) Wet Pressing; and 4) Dry Pressing. This article will summarize some of our current knowledge on the materials and procedures for making light-weight block. It should be kept in mind that this information is on a product that is still under development rather than on a unit ready for commercial manufacture.

Vibrating Besser Machine

One method of forming block is on conventional machinery used for forming concrete blocks. At the left is clay block being formed on a vibrating machine. The batching mixing and forming are all accomplished with conventional block plant equipment.

Forming with a vibrating type machine seems to require the presence of grog in the feed mixture in order to get proper forming. The grog can be crushed brick, pre-fired clay, or expanded shale aggregate, whichever is most convenient. Less grog is needed for forming when the clay raw material is a hard shale rather than a plastic clay. The grog not only aids forming, but also reduces firing shrinkage.

40-60% Grog

The amount of grog will vary with the type of clay used, but in general it has been found that the feed mixture should contain 40-60 per cent by weight of grog. The grog size should provide 80 per cent of material uniformly distributed between minus 4 mesh and plus 48

mesh and 20 per cent of material minus 48 mesh. The grog should be hard and strong since its strength is a determining factor in the finished strength of the block.

The clay matter can be any raw material that is suitable for structural clay products. The more desirable structural clay materials are those that have low plasticity and low shrinkage. It is also important that the clay or shale have a lower maturing temperature than the grog used in the mixture. Otherwise shrinkage will be excessive or strength will be low.

The reduction in weight is accomplished by addition of expanded vermiculite to the mixture. Vermiculite is a lightweight aggregate material weighing only 7 pounds per cubic foot. It is compatible with clay materials and can withstand firing temperatures up to 2100°F. It has been found that 7 per cent by weight of No. 4 size vermiculite will reduce the weight of an 8 x 8 x 16 block to 20 pounds. It may be desirable in some mixtures to use as much as 12 per cent vermiculite.

What Vermiculite Does

Vermiculite not only reduces the bulk density, but also improves the forming qualities of the mix, increases the handling strength and the fired strength. Quantities as low as 2 per cent vermiculite have been used to improve forming characteristics where weight reduction is not a prime consideration.

Mixing is accomplished in the ribbon-type mixer or concrete block plants. The best results are obtained when the shale and/or clay are premixed with water in a separate blunger to obtain a thin slurry or slip. A deflocculant such as tetrasodium pyrophosphate, or Additive A or Polyfon, should be used to reduce the quantity of water required to prepare the slip.

(Continued on next page)



Long a leader in product development, Clemson ceramic dept. head Robinson reports research efforts in block, sponsored by Zonolite Co.

Making Clay Bonded Block . . . Continued



It is not necessary to prepare a slip from raw materials that are crushed and screened. However, wet lumpy river bottom clays cannot be properly mixed with the other constituents unless the clay is blunged into a slip or pre-dried and crushed. The slip technique should be much less expensive. All of the water desired for the mixture should be added to the slip.

Slip Preparation

In the slip preparation method the grog and the vermiculite are added to the ribbon mixer, and then the slip is pumped into this mixer. It is preferable to pre-wet the vermiculite with one pound of water to each pound of vermiculite, and then put the rest of the desired water into the slip. Thus all the water is either in the vermiculite or in the slip, and it is not necessary to add any additional water to the concrete mixer. Pre-wetting the vermiculite serves two functions: First, it prevents dusting and blowing of the vermiculite, and second, it prevents any lumping of the mixture.

Dry Mixing

An alternate mixing procedure is the dry mixing method. In this method the screened clay, the grog, and the vermiculite are placed in a concrete mixer, and then water is added to this combination while mixing action is continued. It is desirable in this method, but not necessary, to pre-wet the vermiculite with one pound of water to each pound of vermiculite. Results obtained so far have indicated that somewhat lower fired strengths are obtained from the dry mixing method as compared to the slip mixing method.

The forming of the blocks follows the conventional practices of the concrete block producer; however, it has been found that a person skilled in making concrete

blocks will make two mistakes in forming the clay blocks.

The first mistake is that he will try to form the block with too little water. The best results are obtained when the largest possible amount of water is used during forming. This clay will provide much more wet strength than will Portland cement. This means that the clay block can be of considerably wetter consistency than can concrete block. Most operators have to be shown this fact, and they will not believe it until they see it.

The next mistake is getting insufficient feed into the mold box. It is very easy to mold a block containing only 15 pounds of material in the block. This block will look very good immediately after forming and seem to form nicely; however, it will be very weak and crumbly after firing. It is necessary to get somewhere between 20 and 24 pounds of dry material into the block mold in order to get a block that will fire satisfactorily.

Wet Pressing

The wet pressing process differs from the vibrating block machine process in that higher pressures are used. Forming pressures in the neighborhood of 1000 to 4000 pounds are used on the block. This type of action can be obtained with hydraulic block machines. The same mixing procedure and raw materials can be used for this process as are used for the vibration forming.

The wet pressing process adds approximately 2 pounds to the weight of the block as compared to simple vibration packing, but at the same time it gives increased strength to the units. The increase in weight can be prevented by changing the composition to include more vermiculite.

The forming and handling properties are greatly improved by the addition of a binder to the wet pressing mixture. The addition of 3 per cent bentonite or 1 per cent of Polyfon T or Additive A will provide excellent dry strength in the block units.

Very short drying times have been obtained with wet-pressed units. Units have been introduced directly into 300°F. dryers immediately after pressing without suffering deleterious effects.

Slush Casting

The slush casting process differs markedly from the preceding forming operations, and it offers certain distinct advantages. This process requires much less investment in equipment and can be started on a very small scale. This process also produces the highest strength for a given weight of block and does not require the use of grog.

The slush casting process requires first the production of a thoroughly deflocculated slurry of the clay and water. The vermiculite is added to the slurry just prior to molding. The resulting mixture is too thick to pour into molds but can be vibrated freely into the mold. After molding the vermiculite acts as a sponge and draws water from the interior of the mass causing it to stiffen and set up. The piece can be ejected from the mold in between 3 to 30 minutes time.

(Continued on page 60)

**BOYD
PRESS
AT WORK:**

R_x FOR RECESSION: Gladding McBean Builds a BETTER Brick to Sell MORE Brick

Cored, two-faced, SCR brick is only one of many structural clay products for which Gladding McBean uses modern, creative dry press compaction methods. Boyd Presses also serve the company for face brick and refractories.

Busy Boyds serve growing west coast demand for dry press brick.

On the west coast, Gladding McBean has pioneered the production and the use of a two-faced dry pressed SCR brick, for building partitions—into an active, profitable market.

Boyd Presses at their Pacific Northwest Division are busy turning out a SCR brick in a variety of colors which boasts equal perfection on all faces, freedom from kiln markings and straight, square edges. The cored, dry press brick can carry conduit and steel and forms a partition wall of striking beauty, strength and utility.

Gladding McBean's success in securing new markets for structural clay products is typical of the way industry leaders are putting Boyd Press to work to obtain new profit opportunities . . . in brick, SCR and Clay block.

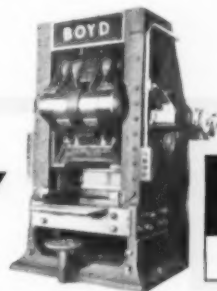
Why a *Boyd Press*? Ask any refractory producer. With a *Boyd Press*, you can't help but turn out a product with smooth, straight edges—because its pressed out *in a die*. You set straight on the kiln car and use less moisture, too. Drying time is less, shrinkage is reduced and dimensional stability and size is much easier to attain and control than by *any other* production method.

The dry press era is here now. Why not take advantage of the pioneering experience which is available to help you seek new and profitable markets for clay products? Just write or call Chisholm, Boyd & White Company—ask for Bob Poole.

CHISHOLM, BOYD & WHITE COMPANY

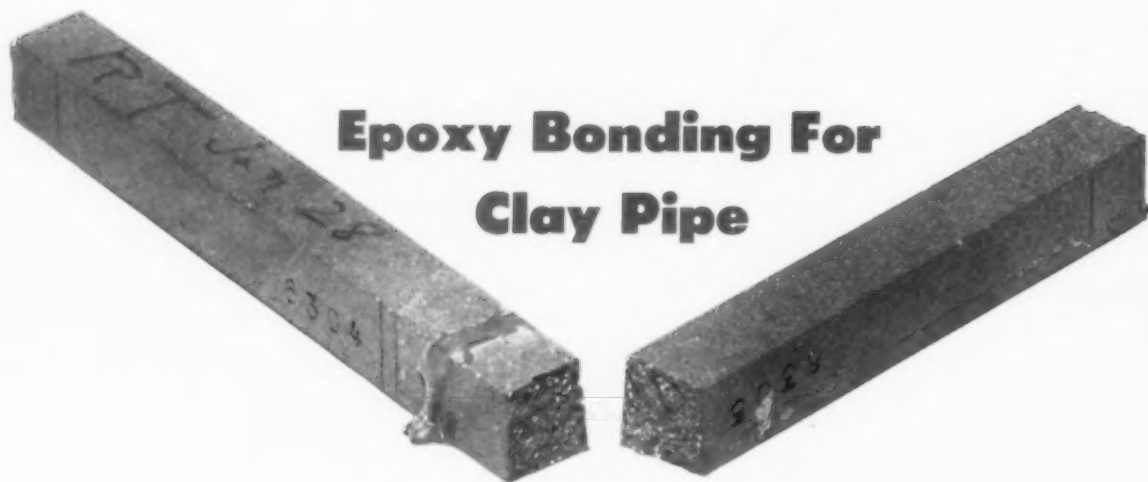
A Subsidiary of Wehr Steel Company

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BOYD
POWER
PRESS

A recently developed process for:



Epoxy Bonding For Clay Pipe

by
John Delmonte
General Manager
Furane Plastics, Inc.
Los Angeles, Calif.

The development of epoxy adhesives offers the manufacturer of clay pipes and pipe fittings, and the contractor responsible for their installation, materials which are stronger and more durable than the products being bonded. This has been well substantiated by numerous tests and field service application.

Probably the most outstanding virtues of the epoxies are their remarkable adhesion and low cure shrinkage. This adhesive quality is singularly successful upon glass, concrete, ceramic, and clay products. Attempts to break clay bar joints made with epoxy resins result in failures outside of joint area, as Figure 1 and 1A graphically portray.

This is true whether or not the joint is soaked in water for months before tested to destruction. In the illustration used, the epoxy adhesive illustrated has been prepared from clay pipe grog and epoxy resin (identified commercially as epocast 157).

To find the reasons for the success of epoxy pastes and adhesives, it is desirable to examine briefly the background of these materials in relation to other plastics and the measures necessary to formulate them to the specific needs of the clay pipe industry.

Epoxy resins, known to the chemist for about ten years and enjoying important commercial applications for about five years, are among the latest additions to the plastics industry. Prepared from the chemical reaction of epichlorohydrin and bisphenol A, they appear in either liquid form or solid form from which adhesives,

coatings, pastes, impregnating, laminating, and other resins are formed.

Table I summarizes differences between liquid epoxy resins and solid epoxy resins.

The epoxy resins described in Table I are the base resins offered by manufacturers such as Dow Chemical Company, Ciba Company, Bakelite, Shell, and Jones Dabney Corp. They serve as the *starting point* for the formulation of adhesives, coatings, pastes, etc., occupying the same relative position to commercial users as cellulose nitrate flakes do to the manufacturer of lacquers.

Characteristics of Base Epoxy Resins From Epichlorohydrin and Bisphenol A

FORM	APPEARANCE	EPOXY* EQUIVALENTS	SPECIFIC GRAVITY
Liquid—Viscosities range from 10,000 to 50,000 centipoises at 75° F.	honey-like amber liquid	180 to 350 g. mole. equiv.	1.16 to 1.20
Solids—Wide range of molecular weights—melting points of 150° F. to 280° F.	Friable, amber colored lump resins	500 up- g. mole. equiv.	1.18 to 1.20

*Data useful for determining correct chemical combining proportions.

Properly handled, and correctly formulated with adequate quality control they become useful industrial materials. The particular steps adopted to make them useful to clay pipe manufacturers and contractors are described in the paragraphs which follow.

How Epoxies Are Hardened

Epoxy resins are thermosetting resins and as such are capable of being converted to an infusible and insoluble state through the adoption of appropriate curing agents. These curing agents are essential to the successful commercial utilization of epoxies—improperly used the results are unsatisfactory. The situation may be likened to the assembly of the steel framework of a building, without proper and adequate rivets or welding, the structure is not sound. Curing agents, like rivets or welding of steel, are the cross-linking agents of epoxy resins, tying them into a sound body.

For the clay pipe industry and in particular the contractor, curing agents which are capable of setting at room temperatures of 70 to 90°F. and which are non-dermatitic are essential. The safety features of non-dermatitic hardeners should be explained. Early in the technology of epoxy resins, room temperature curing hardeners were offered which were harmful when making contact with the skin.

This problem has been resolved with the availability of safety hardeners permitting random field applications by relatively unskilled personnel. Mixing and application of a typical clay pipe joining compound are shown on page 44.

There are several phases to the curing or hardening process which should be noted.

1—Epoxy adhesive or paste formulations are mixed carefully with the correct amount of curing agents (pre-weighed kits of adhesives and hardeners are recommended for field application).

2—The adhesive/curing agent mixture is applied immediately to the joints to be bonded or surfaces to be treated. If one waits too long the adhesive and curing agent will react in the container in which they are mixed, and harden before they can be used. The useful working life depends on the system used and prevailing temperature. In general, work-

ing lives of 15 to 45 minutes are typical.

3—After they are applied to the clay pipe joints or surfaces, the epoxy paste and curing agents will begin to thicken and then set or gel—usually in two to three hours—sooner if external heat is applied.

4—After the jointing compound has set, it will continue to cure, and to become stronger and more resistant to water and chemicals. Exposure to water and to chemicals prematurely may arrest the curing action, resulting in less satisfactory assemblies. In general, a minimum of three days should elapse at 70° F. or higher temperature for Epocast 157/947 unless external heat is applied to hasten the cure.

5—When completely set and cured, the chemical resistance of the Epocast system is adequate; inasmuch their strengths enhance the clay pipe section to which they are applied.

Epoxy resins are selected by the formulator to provide an optimum blend of molecular weights and viscosities to achieve a desired degree of

reactivity. To these are added, with appropriate milling for thorough dispersion, fillers to reduce shrinkage, improve adhesion, enhance thixotropicity, and improved chemical resistance.

For the clay pipe industry, the finely divided grog of clay pipe manufacturers serves as one of the components, yielding the same reddish brown color of the elements being joined. Large and small gaps in the assembly of clay pipe sections are filled, and the system cured in situ.

While there are other forces which may fracture clay pipes, such as shifting soil pressure or abuse during installation, the areas most apt to break may be protected by glass cloth tape as a reinforcement and laminated into place by a thinner version of Epocast 157, known as Epocast 157-C.

The glass tape is solidly welded to the unglazed clay pipe structure to form a protective area much stronger than the original section. This pro-

(Continued on next page)

In test, brick breaks before joint



cedure is also invaluable to field repairs of cracked bodies or sections. Large clay pipe sections are effectively joined.

There are certain disadvantages to the use of epoxy pastes by clay pipe manufacturers and contractors, which if recognized beforehand, may be compensated. One of them has already been cited, the long time to cure at room temperatures before full strength and chemical resistance are realized. Another disadvantage is related to field applications of clay pipe by contractors, where bonding under moist conditions may prevail. As any manufacturer of adhesives will point out, best results are obtained when the joints are dry and curing is conducted under dry conditions within the prescribed temperature ranges.

However, if the problem of wet locations exists, consult with manufacturers of epoxy pastes and adhesives. There are types of curing agents available for epoxies which will cure under water if necessary.

One further disadvantage that might be noted is the effect of salt glaze surface on clay pipe. If epoxies are bonded to the salt glaze surface, any water leaking or lack of adhesion of the glaze may mitigate against the bond strength. Hence, to be on the safe side, removal of glaze in the proposed bond area appears desirable.



Large pipe sections can be joined with process.

In summation, the salient advantages of epoxy adhesives and pastes may be cited.

1—They are strong and permanent, and entirely resistant to root penetration underground.

2—They are capable of developing bond strength superior to the pipe structure.

3—They will seal against moisture and chemicals and effect repairs on cracked clay pipe structures.

4—They permit field tap joints into main conduits and the development of reliable assemblies which meet city and county specifications. This fea-

ture is of immediate appeal to contractors faced with costly assemblies and the use of special pipe fittings. Epoxy pastes and adhesives will allow him to tailor the assembly on the location.

5—Epoxy formulations from experienced manufacturers offer the manufacturers and contractors new, but proven materials of construction. Whether sealing or jointing of clay pipes are involved or the repair and patching of related structures, epoxies will perform in an outstanding manner.



Establishing of a field joint with Epocast 157.

De-airing

Beginning a new series on theory
and practice to help plant operator
to understand, control the de-airing process

By
J. George Seanor

The Vacuum Process (commonly called "deairing") is used almost universally by heavy clay products plants in the stiff mud process; and it is sometimes used on dry presses.

Vacuum And Pressure

Basically the application of partial vacuum to any process is a problem of pressure. It is as simple as that. Because usual methods of measuring pressures in a vacuum system are indirect, rather than direct, many plant men are confused. Once they begin to think in terms of pressure the vacuum process becomes relatively easy to understand insofar as its practical application is concerned.

A fish on the bottom of the ocean lives under great pressure because of the weight of the water above him; but a fish that lives near the surface of the ocean lives under relatively little pressure. In a similar manner man, and all of the machines he uses, functions under the pressure of the air above. The technical term for this pressure is "atmospheric pressure".

Pump Reduces Pressure

It is simply the pressure exerted by the weight of the air above you, wherever you may be. This pressure, or variations thereof, affects many of men's activities and processes, and the effect may be beneficial or adverse.

A vacuum pump is simply a machine which functions to reduce the

pressure on a process to a point that is below the normal atmospheric pressure at the place where the process is being carried out. When you use a vacuum process on a brick machine, you, with the vacuum pump, reduce the pressure on the clay **INSIDE** the machine to some pressure that is below the atmospheric pressure which normally exists in the machine room on the **OUTSIDE** of the machine.

In different lines of endeavor, and for different purposes, man uses different indexes to indicate pressures.

In the United States, pressures that are below atmospheric (partial vacuum) are usually indicated by "inches of mercury" or "inches of water". In many other countries partial vacuums are indicated by "Centimeters of mercury", or "Millimeters of mercury". Meteorologists, on their weather maps, use "millibars" to show atmospheric pressure.

"Normal" Pressures

Since atmospheric pressure, at any given geographical location, is not stable, but varies from time to time, in order to have a fixed point of beginning Scientists and technicians use what they term a "Standard" or "Normal" atmospheric pressure, which is arbitrarily based on the average barometer at sea-level, at a certain latitude.

A standard or Normal barometer atmospheric pressure would exist when the Barometer stands at 29.92" of mercury, if the temperature of the atmosphere is "zero" (0°) Centigrade, and if the mercury in the barometer has a density of 13.6 grams per cubic centimeter.

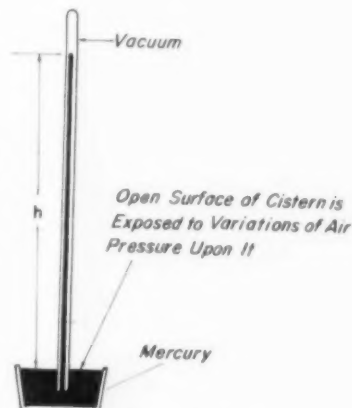
The principle of the barometer is shown at right:

A long glass tube, sealed at one end, is filled completely with mercury, and placed in a bowl of mercury, as shown. The mercury in the tube will settle down, leaving a vacuum above it, until the weight or pressure of the air on the open surface in the bowl balances the mercury in the tube.

Then the height "h" when measured in inches IS the atmospheric pressure, at the place where the bowl is located. If the weight of the air, at that place, changes and increases or decreases in height "h" will become longer or shorter proportionately to the air pressure.

A value for "h" of 29.92" at sea level and 0° centigrade has been taken as "normal" or "standard". If a very long tube were filled with water instead of mercury, the height of the column "h" equalling a "standard" barometer of 29.92" of mercury would be 33.93 feet or 407.16". In France, the height "h" would be measured in centimeters and the height which equals 29.92" would be 76 Cm. On weather maps in the U. S. and England, the height "h" is calibrated in Bars and Millibars and 29.92" of mercury is 1.013 Bars, or 1013 Millibars.

(Continued on page 52)



Drawing shows principle of operation of barometer.



ECSA Members and guests: front row, R. A. Utiger, Ted Berger, Bill Karl; second row, D. M. Groves, Frank Leftwich, B. K. Powers, Lucas Pfeiffenberger; third row, Harry Wilson, Leo Scillia, W. D. Heney, Ben Batson; fourth row, Norman Briggs, Ron Hardy, O. W. Lanier, Mel Cruzen.



Research Director
Lucas Pfeiffenberger

Outgoing president Utiger (left) shakes hands with new president Ron Hardy, with VP Cruzen and Sect-Treas Groves watching.



Hardy Elected President, Research Report Featured

Election of officers, choice of a site for its mid-year meeting and reports of significant research progress highlighted the annual meeting of The Expanded Clay and Shale Association held in Hotel Cleveland, Cleveland, O., January 8 to 10.

Hardy Elected President

Ronald G. Hardy, Onondaga Brick Corp., Syracuse, N. Y., was named president succeeding R. A. Utiger, Cinder Concrete Products Co., Denver. Hardy moves up from the vice-presidency. Utiger served as president in 1957 and 1958.

Melvin G. Cruzen, of Light Weight Aggregate Corp., Livonia, Mich., succeeded Hardy as vice-president. David M. Groves, Shalite Corporation, Knoxville, Tenn., was reelected secretary-treasurer.

Named as directors were the officers and William W. Karl, Lehigh Materials Co., Tamaqua, Pa.; Leo A. Scillia, Plasticrete Corp., Hamden, Conn.; Ben Batson, Shalite Corp., Knoxville, Tenn.; W. D. Heney, North Central Lightweight Aggregate Co., Minneapolis, Minn.; A. S. Johnson, Carolina Tuff-Lite Corp., Salisbury, N. C.; B. K. Powers, Virginia Lightweight Aggregate Corp., Roanoke, Va., and Frank Leftwich, Sayre & Fisher Co., Sayreville, N. J.

New York Meeting

New York City will be the locale of the ECSA mid-year meeting June 17-20. This will be held in conjunction with the Engineering Progress Exposition sponsored at the Hotel Commodore by the National Society of Professional Engineers and the New York State Society of Professional Engineers. The ECSA will have a display booth in the grand ballroom of the Hotel Commodore at 42nd St. and Lexington Ave.

New Impact Crusher

At the open sessions of the Association Thursday and Friday mornings, a presentation on the possible application of the Tornado impact crusher to expanded clay and shale reduction was given by Thomas E. Bridgewater, president, Werco Steel Company, Chicago.

The handling of highly abrasive material is a familiar challenge to lightweight aggregate producers, he pointed out, particularly from the aspect of cost. Several installations in the crushed stone and sand and gravel industries have shown exceedingly good results. Werco at present is crushing 99% silica at a metal replacement cost of approximately 10 cents per ton.

A report on "Design Practices for Selecting Proportions for Structural Lightweight Concrete" was presented by L. E. Pfeiffenberger, technical director for the Association. This was a preliminary discussion on designs for l.w. aggregate plastic mixes, as performed in the Association-sponsored testing program. Following this paper, field practices of producer members and contractors were discussed in an open forum.

Tour Dwight-Lloyd

A tour of the sintering laboratory and pilot plant of the Dwight-Lloyd division of the McDowell Co., Cleveland, was the feature of Thursday afternoon's session. Association members and guests were escorted by Harold E. Rowen, general manager, Dwight-Lloyd division, and Tom Ban, laboratory director, on an inspection trip through the Cleveland plant facilities.

Friday's sessions included a talk on "Introducing Lightweight Aggregate in a New Territory," by W. D. Heney, executive vice-president and sales manager of North Central Light Weight Aggregate Corp., Minneapolis. This was a comprehensive report on how a producer goes about the job of acquainting a virtually new area with the advantages of l.w. aggregate. Techniques employed to tell the business community as well as the general public about a new operating plant, and to familiarize architects, contractors and engineers with the aggregate itself were described. Color slides used by Heney at the 8th Annual Concrete Conference held at the University of Minnesota in December were included.

Secretary's Report

T. R. Berger, executive secretary, in his six months' report said, "Interest in expanded clay and shale lightweight aggregates has never been higher."

He noted that the Association "in recent years has demonstrated that trade groups such as this serve as an unequalled medium for reaching a solution to problems that the go-it-alone approach would find much harder of achievement." He added, "The flow of communication among the component membership of this or any Association is one of the most valuable aspects of such an organization."

Finally, he challenged the producer-members to "look in the mirror critically and make up your minds what you want, where you are going and how you intend to get there."

L. E. Pfeiffenberger, technical director, reported on his attendance at American Concrete Institute and ASTM meetings. He was authorized to attend a conference at Ohio State University March 19-20.

How Henderson Cut Losses In Shipping Packs By Railroad

Plant worked out own method for shipping strapped packs; cut losses to near-zero

Henderson Clay Product's railroad shipments of strapped brick are a small percentage of their output but despite this the company has put in a major amount of work and effort in developing a new method that reduces breakage and loss to an almost non-existent figure.

Their aim in developing this method was not to save material or labor costs but to eliminate as much as possible losses and resultant complaints by customers. With-in reason, cost was a minor factor.

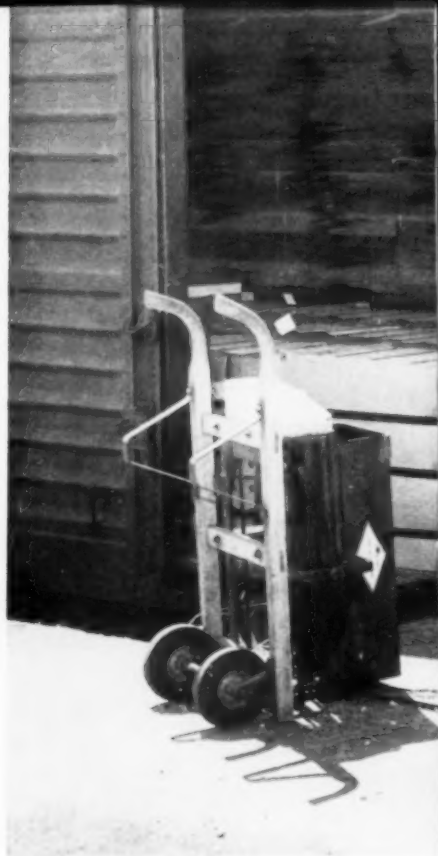
No Complaints

They've succeeded in their aim to the extent that the company, in Henderson, Tex., can't recall their last claim for damaged brick. This has included shipments as far as Colorado and the Chicago area. Henderson has sent men to the receiving end and found cars with one, two or no broken brick.

Their pattern of loading is relatively simple, if you overlook months of experimentation and trials. The pattern relies on two or three "musts" for best success, as developed by J. E. Jimmerson, superintendent, and Jack Gatlin, shipping foreman. Others involved in the development are general manager Homer Bryce and the plant engineer, Bob Orsch.

Packs by Fork

The rail car standard Henderson 400 brick pack is brought to the rail car by fork lift truck. The plant



yard is level with the floor of the car so that the trucks move up no incline when using the steel dock plates going into the car.

One of the first steps is to tack three Acme Steel 1 $\frac{1}{4}$ " x .035 straps around the car walls; these straps are just tacked enough to hold them in place. Six cubes are usually placed in each end of the car. Cube-high cardboard is placed between each cube row, for the width of the car. No cardboard is used for the rows running the length of the car, since it's been found that the corner pack papers on the packs are adequate protection in this loading method.

The strap around the car walls is then strapped around the six cubes in the end of the car so that the six cubes are one unit. Then the same thing is done at the other end, forming another six cube unit.

Filling Center

Then two or three rows of cubes (to fit the car) are placed in the center of the car. Sometimes split cubes are used if necessary. These doorway cubes are again strapped as one unit, making what in effect is three separate units in each car. Any extra space, too little for a 100 pack, is wedged tight with cull lumber.

Henderson leaves approximately a foot open down each side of the car, between the cubes and sidewalls. The only other protection used in the car, aside from cardboard, is straw under the cubes except for the center cubes.



View at left shows the tightening of straps of filled car.

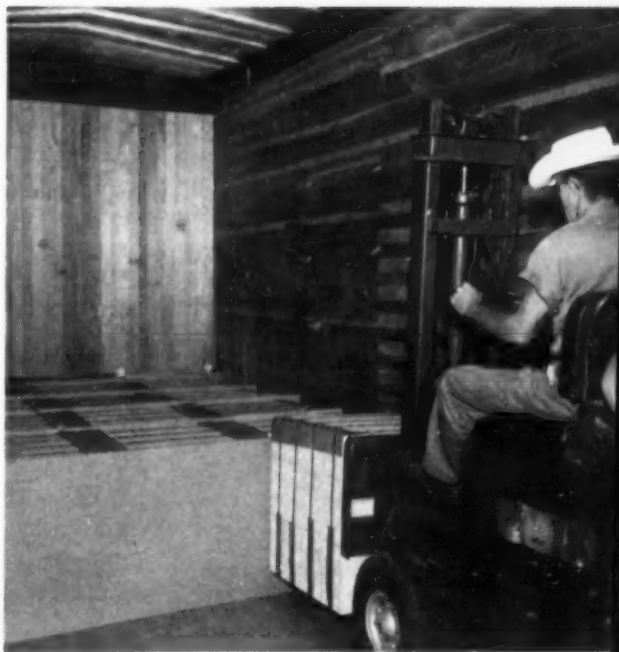
Henderson has found that two things are necessary to success. The first is to use only top-grade cubes. Cubes must be well stacked and tightly strapped to make the car loading method work to its best. Jimmerson stresses the importance of this point.

Another essential is tight loading. To accomplish this, Henderson uses wood wedges on the doorway cubes, if needed, to be sure that the cubes are butted tight and hard all through the car, end to end. No sort of floating or semi-floating load has been found satisfactory.

And that's pretty much the story, of a method that seems simple but really works well for Henderson. Almost all smooth face brick go in packages. Since chips are more noticeable on smooth brick, they must have this extra protection.

Of Henderson's output, only 20-25% is shipped by rail, and of this only 15% of rail shipments are strapped. Cars of loose brick are protected by straw, the usual way.

All cubes are set in place by fork truck.



**Full Page of Pictures
on Next Page**



Fully loaded car including center packs.

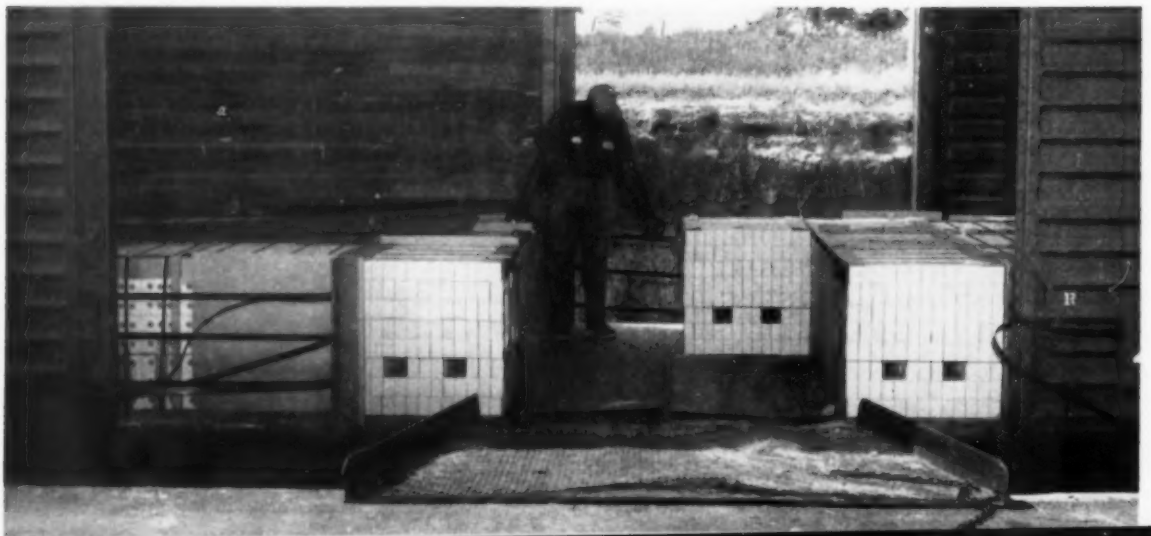


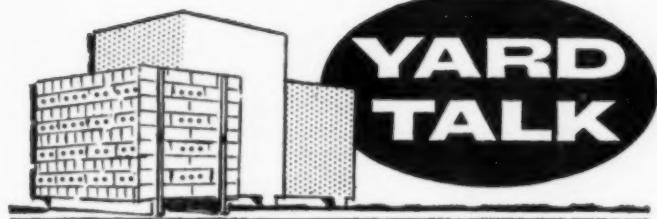
Fork operator moves center packs into place in car.

The straps on one of the end loads is here tightened.



Strap to go around center unit is already in place, hanging loose at left and right by door. Note how cardboard is placed in car.





Kansas Brick & Tile's Hoisington plant shut down after Christmas for installation of some new equipment including a pug mill, hammermill and addition of a storage bin.

Acme Brick Co. reports that their newly acquired Great Bend-Kanapolis (Kans.) plant will be expanded to make tile as well as brick.

There's a lot of equipping and modernization going on, right now in the industry. The Mike Baker Brick Co., in Lafayette, La., has just completed a 56' x 180' clay shed, says manager-partner Henry Busch. They are adding a new line of red end cut pavers, too; have bought a second Superlite unloader, Busch adds.

In that same general area, Holly Springs (Miss.) Brick & Tile Co. has a new plant in the works, according to general manager Charles Laird. This includes a 50M per day gas fired tunnel kiln, hammer mill, grinding and screening unit, with cost running somewhere around \$200,000. Date for construction to begin hasn't been set as of when we heard from Laird. An interesting point about this plant, concerning their financing, was sent to us by Harris Gholson, president of the local Bank of Holly Springs. The town evidently passed a bond issue, with only nine citizens voting against the issue to expand the plant. Gholson and Laird were very pleased by the town's obvious interest in, and desire for, the brick operation.

Church Brick Co., in Bordentown, N. J., is similarly busy. Bringing us up to date, Pres. LeRoy Church notes that the plant built a new tunnel kiln

two years ago; is now rebuilding their dryers, added a $\frac{3}{4}$ yd. Marion shovel in the pit. They're installing a new Mecco apron feeder and Steele #6 disintegrator, Church tells us. They're also busy finishing a new 50' x 60' clay storage building.

Another new shed, for packaging and storage of their tile, 50' x 60', has been put in at Adel (Iowa) Clay Products, reports general manager F. L. McCrea. New there also is a truck loading dock.

Plibrico Co., in Trenton, N. J., has a new 4 yd. Munsen Mill mixer and a Stoker bag packer, reports N. S. Welshon, manager, with cost of about \$15,000.

Sticking with the people adding equipment, Reno Press Brick Co., of Nevada, is completing the changeover this year by remodeling down draft kilns and the addition of two more Bickerstaff-equipped fork trucks so they'll be completely modernized, handling all ware on pallets. Bert Caton, president, tells us. Quoting Caton, they're experimenting on colors now, hoping to have one or two on the market this summer. Plant has purchased a GBC Prater mill from Mecco for grinding oversize from screen.

Here's a quoted comment from Caton: "The biggest deterrent we have to sales is adequate engineering and design information for reinforced walls, either cavity or with jumbo cored brick. Most architects and engineers don't want to take the time to calculate; they want tables, etc."

While we're quoting people, here's some news from Robert L. Ferguson, president at Yankee Hill Brick Co.,

Lincoln, Nebr. "Varner built us a large clay storage building last fall. We installed an Eagle Iron Works crusher and a conveyor system to put the crushed clay into the storage building, which is partitioned into six bins for different types of clay."

"We bought a Scoopmobile to move the crushed clay from the storage building into the bins that feed our hammer mill. We also built a large sorting and packaging shed of steel trusses and corrugated iron; that is, Varner built it for us."

"In Omaha we built a fine paved yard alongside the Missouri Pacific RR on Saddle Creek road, and a pretty little office building which contains our brick display and sales room. We are shipping and storing, there, brick on pallets. We shall find out in 1959 how it will all work out."

Tupelo (Miss.) Brick & Tile Co has put up a new 32' gas fired periodic, says Ralph White, manager. Also added a Miller hammer mill and a Deister heated screen.

Still in Miss., further south, Tri-State Brick & Tile of Jackson is remodeling an old tunnel kiln to increase capacity, reports R. H. Robinson, president. They've added an Eagle crusher; 54' x 52' machine shop; planning something new in colors. Robert D. Robinson is now working there as executive vice president.

Oskaloosa (Iowa) Clay Products Co. is installing a new steel cased dust elevator from the dry pan, it's reported, and planning a new line of textured red face brick.

There's a lot going on at Jenkins Brick Co. in Montgomery, Ala. We'll quote Pres. Harry M. Meek: "We have begun construction on an entirely new and modern brick plant to be located near Coosada, Ala. Coosada is about 14 miles north of Montgomery, on the main line of the L&N railroad."

"This plant will feature a Dressler tunnel kiln and dryer, with the most modern brick machinery and handling equip-

(Continued on page 65)

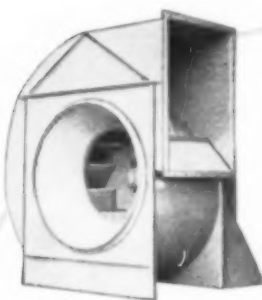
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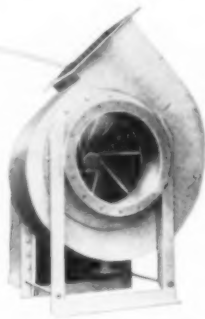


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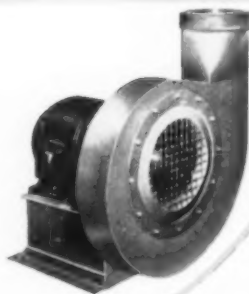
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Type AE Exhauster
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SEANOR Continued

Inches of water are used for measuring kiln drafts and pressures. Since you cannot carry a long glass tube, longer than 407", around a kiln, gauges, calibrated in inches of water, and modified to work within the working range of kiln problems are used.

Air on the surface of the sea is weighed down and compressed by the air above. At places higher than sea level the air is rarer, and less weighed down and compacted. Therefore, the air pressure at places above sea level is less than at sea level. The height "h" would not exceed 20,000" on the tops of very high mountains.

The "Standard" or "Normal" Barometer of 29.92" is a more or less arbitrary point from which to compare or compute conditions at some other altitude. It is the "mean" or "average" of the Barometer's height "h" at Sea Level, at a certain place. It would not be average at some other latitude, even at sea level.

It is a point of beginning, just as "sea-level" is a point of beginning from which to figure elevation of places on the surface of the earth such as high mountains.

Even if your clay plant is located at "sea-level" you will rarely catch the barometer reading 29.92" since it fluctuates up and down from this "average", and rarely stops at any one place.

Readings Sometimes Confused

Many are confused because they are conditioned to believe that the barometer is 29.92" or "30.00" which is more often used than 29.92"; just as if you ask some one what the boiling point of water is they will usually answer, off hand, "212° Fahr." The barometer, which has a "mean", or average of 30.00" at sea level, will have a "mean" or average of a little below 25.00" at an elevation of 5,000 feet above sea level; and the average barometer will be a little above 20.00" at an elevation of 9,000 feet above sea-level.

You must learn to think in terms of YOUR barometer rather than in terms of the "normal" or "standard" Barometer which is used as a base from which to calculate conditions, at other atmospheric pressures,—(unless your plant happens to be located at sea level).

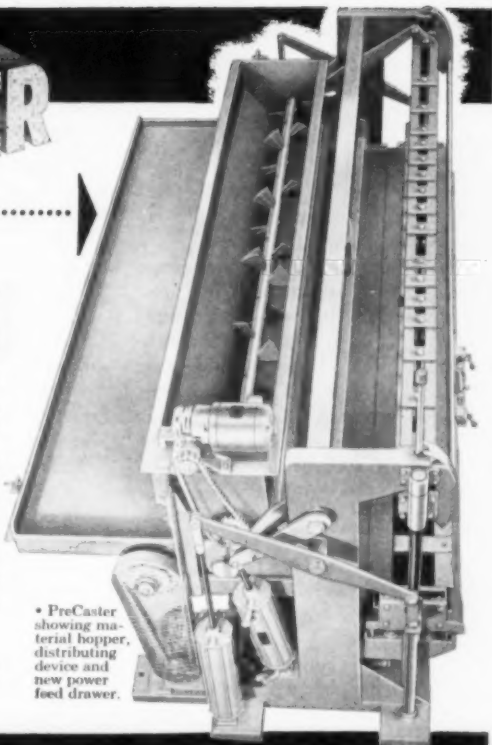
(Continued on page 54)

BESSER

PRECASTER

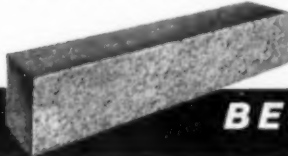
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You have always wanted to produce lintels that match the beautiful texture of concrete block. And, of course, you wanted to do this on a PROFITABLE basis. Now — you can do BOTH by installing a Besser PreCaster, the time-tested, semi-automatic machine for making lintels on a fast, production basis. Ideal also for producing retaining wall cribbing . . . floor and roof slabs . . . fence posts . . . window sills, in fact, any concrete unit that will strip through a straight mold box. Opens up new avenues of profit for concrete block, readi-mix and other products plants.



* PreCaster showing material hopper, distributing device and new power feed drawer.

*Get all the facts. Write for PreCaster Bulletin No. 133.



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SEANOR Continued

When the Barometer is 30.00", the air pressure of the atmosphere is about 14.7 pounds per square inch. In measuring pressures that are ABOVE atmospheric pressures, on a heavy clay products plant, the pressure, if large, is indicated in "pounds" per Square Inch.

For example, when the boiler gauge reads 100 it indicates that the pressure inside the boiler is 100 pounds per square inch higher than atmospheric pressure. Lower pressures are indicated in ounces. For example, the gas line pressure, at the kiln, may be at "20" ounces." Very low pressures, and very little vacuum, are indicated in inches of water.

For example, the pressure under the crown of a down draft kiln may be 12" which indicates that it is .12" above atmospheric pressure (which under standard conditions would be 407.16").

At the same time the "draft" in the stack flue may be .25" which indicates that the pressure there is .25" below atmospheric pressure, and that a slight vacuum exists in the flue.

The practical clay worker often be-

comes confused in his thinking because he has been told that air pressure is 14.7 pounds per square inch. The pressure is 14.7 pounds per square inch, only under standard conditions, or when the barometer reads 29.92".

Standard Conditions Rare

He will continue to be confused in his thinking until he realizes that on his plant he rarely, if ever, encounters Standard Barometric conditions. The pressure of the air on any given plant varies from day to day, and it is generally rising or falling slowly and seldom is stationary for any length of time.

For practical purposes, in the machine room on a heavy clay products plant, one can assume that when, as, and if, the Barometer read 30.00" the pressure of the air in the machine room is 14.7 pounds per square inch.

Suppose the plant were in New Jersey, at sea level. If the operator could ever catch the barometer reading exactly 30.00", the air pressure in his machine room would be 14.7 pounds per square inch. If, some morning, the barometer were reading

31.00", at that time the air pressure in his machine room is actually 15.2 pounds per square inch; and if the next morning the barometer reads 29.00" the air pressure in his machine room would be about 14.2 pounds per square inch.

The natural air pressure, fluctuating between 31.00 and 29.00 on the barometer, varies as much as 1 pound per square inch and at 31.00" barometer the air pressure in the machine room is about 7% greater than when the barometer reads 29.00".

Pressure Varies

Suppose, again, that some foreman, on a plant in the Rocky Mountains goes into his machine room some morning and finds that the Barometer reads 25.5". In this case the air pressure in his machine room will be 12.5 pounds per square inch. Suppose that the next morning his barometer were to read 26.5". In this case the air pressure in his machine room would be 12.98 pounds per square inch.

Then, on the third morning, suppose he finds the barometer stand-

(Continued on page 57)



THE PRIESTER TRUCK CRANE

(PATENTED)

16 units of 500 bricks each unloaded by driver alone, merely pushing buttons.

Unloads off either side. Puts loads on sidewalk where they belong. Requires less than half the unloading space that other devices need. Handles brick or block unpalletted or palletted or packaged. Not necessary to move truck. Unloads one, two or all units at one place! No chipping or breaking bottom bricks or blocks. Gentle handling. For full details, ask for Bulletin TC53.

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MANGANESE ORES—Chromite, Magnetite, Fluorspar and Manganese can be supplied by National Paint & Manganese. Company has greater facilities now, can supply faster through local outlets, offers a wider range of products. National Paint & Manganese Co., Lynchburg, Va.

188/Circle on Reader's Service Coupon

STANLEY TIGHTENERS—The new O tightener is said to operate with ease and speed in any position; use fewer strokes for takeup, reduce operator fatigue. Manually operated tool has unlimited takeup, has two holding pawls on tensioning wheels. Stanley Steel Strapping Co., New Britain, Conn.

185/Circle on Reader's Service Coupon

BOYD PRESS—The new Boyd press has many improvements: new bearings, stronger toggles, heavier frames, automatic force-feed lubrication, air-operated clutch brake, air operated charger. Can give you top profit dollar from high volume dry press brick production. Chisholm, Boyd & White Co., Chicago 21, Ill.

186/Circle on Reader's Service Coupon

TRUCK CRANE—Can unload off either side, put loads on the sidewalk; handles brick or block unpalletted or palletted or packaged. Bradney Machine Co., Middletown, N. Y.

181/Circle on Reader's Service Coupon

CONVEYOR BELTING—Scandura has new fire-proof belts that eliminate fire hazards, will not strip or tear. Belt absorbs terrific impact with minimum abrasion, maker says. Scandinavia Belting Co., Newark 1, N. J.

182/Circle on Reader's Service Coupon

BINDERS—Glutrin (liquid) or Goulac (powder) can help increase molding and dry strength of brick, clay refractories, pipe, tile, and other clay products. Small amounts required—easy to use. Robeson Process Co., Erie, Pa.

188/Circle on Reader's Service Coupon

INVENTORY SCALE—A new totalizing scale by Thayer fits over any conveyor, continuously weighs material passing through. Can be used on level or inclined conveyors. New plate leverage system is guaranteed for the life of the scale. Thayer Scale Corp., Pembroke, Mass.

184/Circle on Reader's Service Coupon

ORTON CONES—More uniform ware can be had with use of these cones. They can be placed throughout the setting to provide a visual check on the ware during the critical high fire stage; indicate end point of firing; show distribution of heat throughout the ware. Edw. Orton Jr., Ceramic Foundation, Columbus, Ohio.

185/Circle on Reader's Service Coupon

SCREEN HEATERS—Heated screens can eliminate blinding, increase tonnage, build greater profits and speed your production. F. R. Hannon & Sons, Canton 7, Ohio.

186/Circle on Reader's Service Coupon

CEMENT GUN—With this machine, two or three of your men can easily place a lining 1 to 6" thick in one to continuous operation; can place up to 5,000 lbs. of refractory material an hour. Saves down time, material and extends the life of your present linings. Cement Gun Co., Allentown, Pa.

187/Circle on Reader's Service Coupon

Please send me more information concerning the items I have circled.

2-59

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166 Titanium Alloy Mfg. Co.
167 Acme Steel Co.
168 A. P. Green Fire Brick Co.
169 Chemical Products Corp.
170 R. G. Varner Steel Products Inc.
171 Williams Patent Crusher & Pulverizer Co.
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204 Rockfacer Co.
205 Besser Co.
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208 Deister Concentrator Co.
209 Link-Belt Co.
210 Chisholm, Boyd & White Co.
211 Robinson Clay Product Co.
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198/Circle on Reader's Service Coupon

FANS—Buffalo Forge CR radial blade fans are built sturdy to work under tough conditions. Use of a refinement of the radial blade design gives both boosted performance and reduced wear. Buffalo Forge Co., Buffalo, N. Y.

199/Circle on Reader's Service Coupon

CUTTERS—Steele has a new spring assembly that replaces the overhead chain and pulley, eliminating the need for overhead beams or the posts formerly required for the installation of their #18 cutter. The spring assembly also provides much smoother action. J. C. Steele & Sons, Statesville, N. C.

200/Circle on Reader's Service Coupon

MOISTURE CONTROL—Stoll has an automatic moisture control that is said to provide 100% control in pug mill or batch mixer; automatically hold desired moisture content, provide against product size variation. Walter C. Stoll & Sons, Los Angeles 32, Calif.

201/Circle on Reader's Service Coupon

EXTRUSION—Marion Brick uses an F-R-H de-airing extrusion machine to get close quality control. Their F-R-H is said to provide extra hard, uniform columns that help maintain production schedules. Fate-Root-Heath Co., Plymouth, Ohio.

202/Circle on Reader's Service Coupon

SCREENS AND CLOTHS—By Ludlow-Saylor are said to have better dimensional stability, resistance to wear, pressure, vibration and heat because of extra efforts in the manufacturing process. Ludlow-Saylor Wire Cloth Co., St. Louis 10, Mo.

203/Circle on Reader's Service Coupon

ROCKFACERS—Can turn a loss into a profit by making 2,000 culls per hour into a premium rock-faced brick. One owner says that his machine was paid for 3 times in the first 9 months. Rockfacer Co., Mesquite, Tex.

204/Circle on Reader's Service Coupon

BATCH MIXERS—Besser machines have twin spiral blades made of Ni-Hard iron; quick acting, air operated discharge gate; entire contents of mixer drum can be discharged in 15 to 20 seconds. Besser Co., Alpena, Mich.

205/Circle on Reader's Service Coupon

GRINDER—America's 304 grinder has been designed to handle big volume grinding at a rate of a ton a minute, handling hard clay shale and other material. Materials can be handled wet or dry because there are no screen plates to clog. American Clay Machinery Co., Marion, Ohio.

206/Circle on Reader's Service Coupon

SCREEN SECTIONS—Tyler screen sections are made for all makes of vibrating screens in any mesh or metal; made with hook-strip or bent-edge construction to suit your machine. W. S. Tyler Co., Cleveland 14, Ohio.

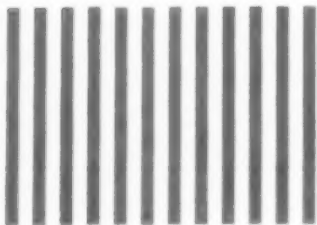
207/Circle on Reader's Service Coupon

LEAHY SCREENS—New model E screens with FlexElex heating assure change of screen cloth as quickly and easily as can be done on conventional, unheated models. No breaking or remaking of electrical connections in the transformer-screen circuit when jackets are changed. Deister Concentrator Co., Fort Wayne, Ind.

208/Circle on Reader's Service Coupon

VIBRATING SCREENS—By Link-Belt have high intensity, circular motion imparted by a simple, two-bearing vibrator; mechanism is fully enclosed for protection from heat, moisture and abrasive dust. Link-Belt Co., Chicago.

209/Circle on Reader's Service Coupon



SEANOR Continued

ing at 24.5". In this case the air pressure in his machine room will be 12.0 pounds per square inch. The air pressure in his machine room is about 8% greater at 26.5" than it is at 24.5".

When you apply a vacuum pump to a brick machine and "deair" the clay, you are, really, processing the clay at a pressure which is below the normal atmospheric pressure at the place where the brick machine (plant) is located.

The degree to which you reduce the pressure inside the vacuum chamber of the brick machine is usually indicated by a vacuum gauge. This is unfortunate because it is a clumsy and inexact way of indicating the "pressure" inside the vacuum chamber.

Absolute Pressure Gauges

Many plants are now abandoning the use of vacuum gauges and are using "Absolute Pressure" gauges which removes much of the confused thought from the vacuum process.

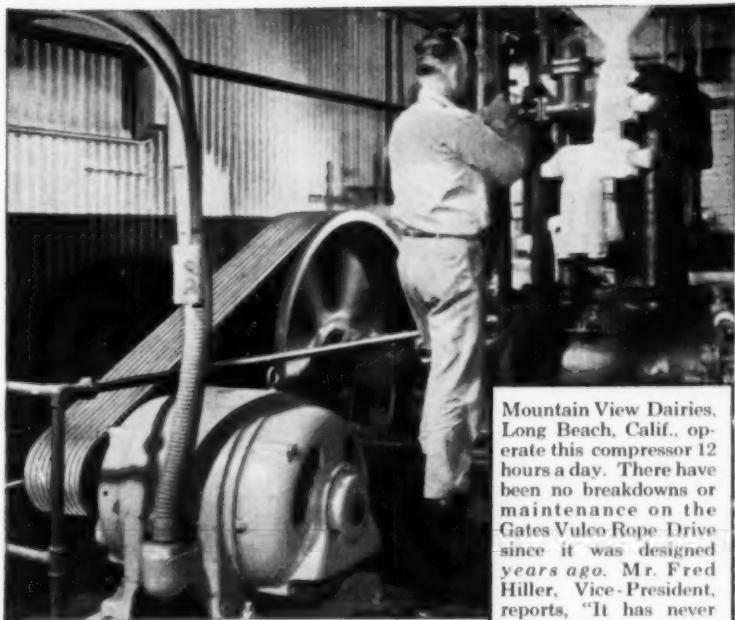
In order to use the vacuum process effectively, the plant operator must understand "Absolute Pressure". It is not difficult to understand but many plant operators are confused by it.

Absolute pressure gauges are generally used, by industry, to measure pressures that are below normal atmospheric pressures. Absolute zero pressure would be reached on this type of gauge if there were no pressure, at all, inside a vessel, chamber, or tank, and at absolute zero pressure the height (h) would be at the same level as the mercury in the bowl—there would be no height or it would be zero.

It is impossible to attain absolute zero on the pressure scale (just as it is impossible to attain absolute zero on the temperature scale) but in the manufacture of "vacuum tubes" and electric light bulbs, zero on the absolute pressure scale is approached very closely but never quite attained.

In a deairing brick machine, pressure can be reduced below atmospheric pressure, but it can never approach absolute zero pressure very closely. A barometer measures absolute pressure, and its Zero is no pressure at all.

(Continued on page 58)



Mountain View Dairies, Long Beach, Calif., operate this compressor 12 hours a day. There have been no breakdowns or maintenance on the Gates Vulco Rope Drive since it was designed years ago. Mr. Fred Hiller, Vice-President, reports, "It has never given us a moment's trouble."

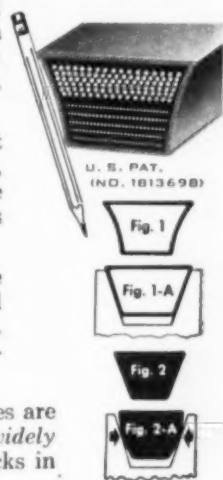
The No. 1 choice of industry everywhere ...the V-belt with concave sides

To prove to yourself why concave sides give this V-belt far longer life, make this simple test: bend a Gates V-Belt as if it were going around a sheave. Feel how the concave sides (Fig. 1) fill out... become perfectly straight (Fig. 1-A).

Note how the belt makes full contact with the sides of a sheave... grips evenly, thus distributing wear uniformly along the sides of the belt. Uniform wear lengthens belt life—keeps costs down.

With a straight-sided belt (Fig. 2) the sides *bulge out* when the belt is bent, and wear is concentrated on the bulge (Fig. 2-A). Uneven wear shortens belt life—increases belt costs.

Because Gates V-Belts with concave sides are so universally preferred, they are the *most widely available*. There are Gates Distributor stocks in industrial centers *throughout the world*.



The Gates Rubber Company, Denver, Colorado

Gates Rubber of Canada Ltd., Brantford, Ontario



World's Largest Maker of V-Belts

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Gates VULCO ROPE Drives

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With VITROMIX, structural clay products, wall tile, floor tile, artware and dinnerware have been produced commercially at 1350°-1500° F. in 150 minutes. In many cases production has been two, three or four times that obtained by using conventional firing methods above 2000° F.

Write us today for samples to test in your own plant so you can learn first hand the benefits offered by this unique body flux. Or contact your Berkshire representative for complete details.



Vitromix is made by Vitro Manufacturing Company and sold by Berkshire Chemicals, Inc.—both component companies of Vitro Corporation of America

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SEANOR Continued

A boiler gauge measures pressures that are above atmospheric pressure and its zero is the pressure of the atmosphere. If the barometer is standing at 30.00" beside a boiler, zero on the boiler gauge is 14.7 pounds per square inch, and 100 pounds of boiler pressure would be 114.7 pounds on the absolute pressure gauge. (114.7 pounds per square inch of boiler pressure is approximately equivalent to a column of mercury 19 feet and 6 inches high)

Need Barometer Reading

It is unfortunate that to get any comparative or definite data from a vacuum gauge, a barometer reading at the level of the machine must be made at the same time. The absolute pressure is then obtained by subtracting the reading on the vacuum gauge from the reading on the barometer.

For example, suppose that on a plant in New Jersey the barometer (at the same level as the brick machine) reads 30.00". Suppose that at the same time, the vacuum gauge on the brick machine reads 27.5". Then the absolute pressure, inside the vacuum chamber of the brick machine is 2.5" (30.00" minus 27.5", or 2.5")

Remember that the barometer itself reads in absolute pressure and that when it is 30.00" the air pressure outside the brick machine is 14.7 pounds per square inch.

The pressure inside the brick machine is 2.5" and, in terms of pounds per square inch, it would be 2.5 divided by 30 multiplied by 14.7 or 1.225 pounds per square inch, i. e. 1/6th of 14.7 pounds. (Officially 1" of mercury is equivalent to .4912 pounds per Sq. In.)

Figuring Processing Pressures

Consequently, this plant in New Jersey, when they had 2.5" absolute pressure inside the vacuum chamber would be processing their clay at a pressure of 1.225 pounds per square inch.

Notice that if their brick machine were not a deairing machine they would be processing their clay under a pressure of 14.7 pounds per square

inch (when the barometer was reading 30.00" at their plant)

Again suppose that a plant in the Rocky Mountains used a deairing machine. Suppose that a barometer at the same level as their brick machine read 25.5" and suppose that their vacuum gauge read 23.00" Then the absolute pressure inside their brick machine would be 2.5" (25.5 minus 23.00)

The pressure inside their vacuum chamber would, at 2.5" absolute pressure, be 1.225 pounds per square inch.

Need Two Readings

Note that when the New Jersey plant (above) carried a vacuum of 27.5" they were processing their clay under a pressure of 1.225 pounds per square inch, and that when the Rocky Mountain plant (above) carried a vacuum of 23.00" they too were processing their clay at a pressure of 1.225 pounds per square inch.

The above illustrates why a vacuum gauge reading, alone, is worthless for comparative purposes unless it is compared to a barometer reading at the time and place when vacuum gauge reading is taken.

If you use an absolute pressure gauge you do not need to worry about a barometer, which changes from hour to hour and day to day.

A vacuum gauge reading at one plant is not comparable to a vacuum gauge reading at another plant at some other elevation, whereas the reading from an absolute pressure gauge would be comparable to that of another absolute pressure reading, anywhere.

A P Gauges Better

It would be better if heavy clay products plants used absolute pressure gauges graduated in pounds per square inch, instead of vacuum gauges. Now that they can be purchased for about fifteen dollars, one would expect them to come into greater use, since they give more exact, and more understandable information.

Under standard conditions, as to temperature and density of the mercury, 1" of absolute pressure equals .4912 pounds per square inch.

If you use only a vacuum gauge on the vacuum chamber, the plant's ceramic engineer, if he has a barome-

Please say "I saw it in B&CR"

ter, can calculate the pounds pressure inside the vacuum chamber. An operating foreman, however, does not have time to do this type of work frequently during the day.

If he has an absolute pressure gauge, graduated in pounds per square inch, a glance will tell him if the clay is being treated at the desired pressure, and, if not, he can immediately investigate the vacuum system to discover why he is not getting the correct pressure on the clay inside the vacuum chamber.

Easy For Foreman

For example, on a plant where the clay is to be processed at a pressure of 1.5 pounds per square inch for best results, as long as the absolute pressure gauge, graduated in pounds per square inch, stands at 1.5 the foreman knows that his vacuum system is working properly. A glance will tell him.

But, if at any time the gauge reads higher than 1.5 he knows, immediately that a leak may have developed somewhere in the system; a vacuum line is clogged with mud; the air filter needs cleaning; some trouble has developed in the pump; or the column speed is higher than the normal schedule calls for.

When a vacuum gauge is used wide variations in readings may occur due to fluctuations in the air pressure surrounding the machine—changes in the barometer. The trouble, or variations in readings, may be due to some defect in the system or it may be due to barometric changes. The foreman is never sure.

Consequently, when the vacuum begins to fall off from some mechanical trouble, the foreman delays action until he is sure that the lowered vacuum is not due to a change in the barometer.

Rarely does a foreman have access to a barometer. (On a few plants there is an ornamental, but inaccurate, barometer on the General Managers desk)

If an absolute pressure gauge is used, instead of a vacuum gauge, the foreman is never confused. If a change in reading occurs he knows at a glance, that he must look for the cause right there in the machine room.

It is interesting to note that the plant (above) in the Rocky Mountains, even with a non-deaired brick

machine would be "deairing" their clay to some extent, as compared to the plant at sea level, (New Jersey plant above), if the latter were also using a non-deaired brick machine. The average barometer on the rocky mountain plant would be about 25.5", whereas the average barometer on the sea level plant would be about 30.00".

When the barometer was 25.5" the clay passing through an un-deaired machine in the Rocky Mountains would be processed under a pres-

sure of 12.5 pounds per square inch. The plant at sea level, when the barometer is 30.00", is processing clay passing through an un-deaired machine at 14.7 pounds per square inch.

With the barometer at 30.00", the sea level plant would have to carry a vacuum of 4.5" on a vacuum gauge in order to process the clay at 12.5 pounds per square inch as does the Rocky Mountain plant without any vacuum.

(Continued on page 63)



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Making Clay Bonded Block

(Continued from page 40)

The molds for this process can be made of a variety of materials such as plaster, wood or steel. Best results have been obtained by using molds made of 12 gauge hot rolled steel. The exterior plates of the mold are perforated on 1" centers in order to facilitate escape of air during the molding operation. The molds can be kept clean by rinsing them with a mixture of kerosene and form oil in between the forming operation.

Any accepted structural clay material can be used in this process; however, the lower the shrinkage of the material, the better it will work. The slush cast pieces will give approximately the same firing shrinkage as is obtained on extruded brick of the same material. It is not necessary to add grog in this process, but it may be desirable to add grog as a shrinkage control measure to those clays which normally show a high shrinkage. This permits production of the block to desirable close dimensional tolerances.

Need Blunger For Slip

The equipment for this process requires a blunger for preparing the clay slip. It is advisable to include steam coils in the blunger in order that the slip can be prepared hot. This greatly shortens the length of time for slip preparation, and most materials will mold faster if molded while hot. A slip storage tank would probably be desirable after the blunging. It would also be advisable to

have a bin for storing the vermiculite. The mixing is presently being accomplished in a machine that resembles a muller type mixer, but which has only the plows and no mullers in it.

This gives a gentle stirring action which is desirable for the mixing. The objection for this type of equipment is that it is not continuous but prepares only one batch at a time. It is planned to make a continuous mixer by using a slow moving screw or ribbon type mixer so arranged that the slip can be fed into one part of the mixer, and the vermiculite in another part. The combination of materials will be discharged from this mixer directly to the molding table.

Molding Table

The molding table should have some provision for vibrating the molds as the clay is introduced to them. The required molding time is 30 seconds, thus meaning that one mold station could produce two blocks a minute or several times this production could be obtained by the use of multi-ganged molds rather than a single mold. After leaving the molding table, the mold should travel along a conveyor that will provide a 30 minute time delay. At the end of the conveyor a stripping device can be used to remove the block from the mold. The blocks would then go on their pallets to the dryer.

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The drying time of these units will vary with different materials, but in general it can be accomplished from 12 to 24 hours. The units have excellent handling strength after coming from the dryer.

Dry Pressing

A granular free-flowing feed can easily be prepared from mixtures of clay and vermiculite. The sequence of mixing is very important in accomplishing such a granular feed. All or most of the water required should be first added to the vermiculite and then the dry clay added to the dampened vermiculite. Mixing should be accomplished in a ribbon or similar type mixer.

The dry-press units in general give the lowest ratio of strength to bulk density. This ratio can be improved by using the maximum amount of water that will still give satisfactory forming. The dry press units can be handled directly from the press without use of pallets. Forming pressures up to 400 psi have been employed. Higher forming pressures will tend to cause pressure cracking.

Firing Of Lightweight Block

The maturing temperature of the block depends largely on the type of bond clay used in the mixture. In general, the maturing temperature will be the same as that used in firing brick made of the same material. The vermiculite is satisfactory for use with all materials ma-

turing up through Cone 5. The vermiculite will not work satisfactorily with materials requiring a higher maturing temperature.

The maturing temperature is also influenced by the forming technique used. The wet press forming method requires a slightly higher firing temperature than the slush casting method. The vibration compaction method requires the highest firing temperature and can easily require a 100°F. higher maturing temperature than block formed by the slush casting technique of the same materials.

The block can be fired on very rapid schedules. The maximum speed has not been determined yet, but satisfactory blocks have been fired on a 13 hour schedule; and it seems apparent that considerable reduction in firing time can be obtained with the block as compared to firing normal brick. The shrinkage of the block is very low. Total linear shrinkages of 1 per cent have been obtained by the block machine forming method and the wet pressing method. Total linear shrinkages of 3 per cent have been obtained with slush cast block.

The maximum height of setting that can be used with the block during firing is not known although block have been fired successfully as high as four units high.

The blocks can be finished with engobes or glazes. The slush cast block is particularly receptive to a glaze finish since it has a very smooth surface texture instead of the rougher texture associated with the other forming operation.

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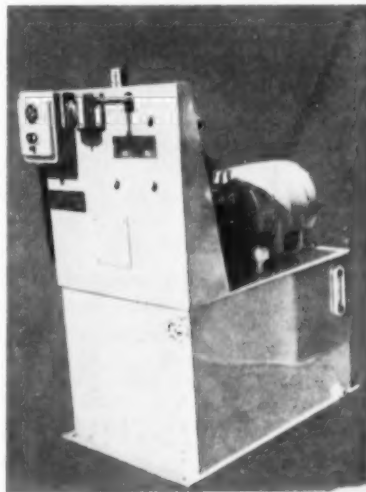
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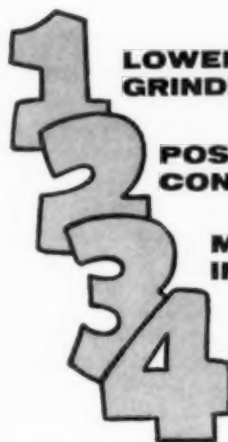
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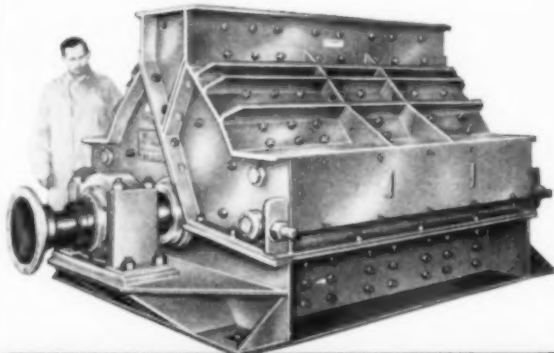


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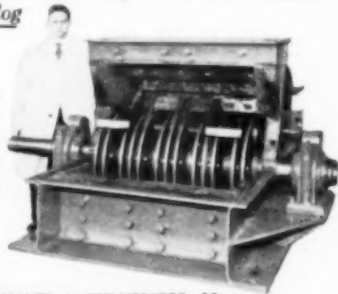
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SEANOR Continued

It is surprising how many plant men believe that a vacuum is a vacuum and that a little pump will provide as much "vacuum" as will a large pump. Some claim that this is so because the pump manufacturer's catalog says so.

What the catalog says is that the pumps, whether large or small, will, on a standard test pull a vacuum to some definite point on a closed vessel. One manufacturer tests all pumps, large or small, and does not ship them unless they pull a vacuum within one-fourth of an inch of the barometer, on a closed vessel.

Plant operators who believe that a little pump will provide as much vacuum as a large one, do not realize that their deairing machine is not a "closed-vessel" within the meaning of the standard procedure for testing vacuum pumps.

If you have an airtight tank, having an enclosed volume of 100 cubic feet, and cover it with an airtight lid, the tank will be full of air, at atmospheric pressure.

If you attach a small pump, for instance, one having a rated capacity of 5 CFM, it will pump the vacuum up, within the "closed" tank, to within $\frac{1}{4}$ " of the barometer. If you use a large pump, and for example, a 50 CFM rated pump, it will also pump the vacuum to within $\frac{1}{4}$ inch of the barometer.

Faster Pumping

This leads some to believe that a little pump is as effective on their brick machine as is a large pump, but this idea is erroneous.

On a 100 Cubic Foot "closed vessel" it will take the 5 CFM pump about 20 minutes to reach a vacuum with $\frac{1}{4}$ " of the barometer; but the 50 CFM pump will pull this vacuum in about 2 minutes—because it has a larger capacity.

The vacuum chamber of a brick machine is not, technically, a closed vessel, even though the user takes great pains to eliminate all air leaks into it. This is because the clay passing through the vacuum chamber is continuously bleeding air into the chamber.

For example, suppose a brick machine is running at the rate of 11,000

brick per hour, and that the clay releases 5 Cu. Ft. of air per minute. In this case, the small pump which has a capacity of 5 CFM could never lower the pressure within the vacuum chamber because the air being released per minute equals the capacity of the pump. The large pump, however, which has a capacity of 60 CFM would lower the pressure within the vacuum chamber because this pump has a capacity that is 12 times greater than the 5 Cu. Ft. of air being released per minute from the clay.

Pump Size Formula

A plant man, for practical purposes, can use the following formula to advantage:

$$\frac{a}{b} \times c = V$$

Where "a" is the absolute pressure in inches of mercury and "b" is the barometer, level with the machine, in inches of mercury, and "c" is the pumps capacity in CFM (from makers catalog), and "V" is the volume of air being pumped in cubic feet per minute.

(Continued on page 66)

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YARD TALK Continued

ment available. The initial installation will consist of a tunnel kiln of 50,000 daily capacity, with provisions in the original design to permit addition of kiln, dryer and machinery to double the capacity."

"The engineering on the entire project is being handled by Swindell-Dressler . . . with their engineering staff and resident engineer in charge. Natural gas is available at the site, with power lines in the immediate vicinity and ample highways leading in all directions. The estimated cost will be about \$900,000."

Here's a few brief notes about industry people: J. J. Junker, president of Sayre & Fisher Co., was elected president of the Ceramic Assoc. of New Jersey at their 44th annual meeting, in January.

Charles LaFollette, financial vice president of Corning Glass Works, has been elected a director of the Corhart Refractories Co., the latter a Corning subsidiary.

Emil A. Axelson has joined the sales staff of Refractories Div., H. K. Porter Co., Inc., working out of Pittsburgh.

General Shale Products Corp., Johnson City, Tenn., is making an Early American Blend, produced in tunnel kilns, said to match in color and texture colonial hand-made brick . . . yet have the economy and quality of tunnel kiln brick. Made in soft reds, light and dark grays.

Further south, we've heard that Atlas Brick & Tile Co., with plant proposed for Shuqualak, Miss., has awarded contracts for building the plant. Will make white, light buff, roman and norman brick; smooth and screening tile, according to Pres. L. C. Guill.

Elmer Apt, president of Ochs B&T in Springfield, Minn., tells us that they're reworking grinding, with addition of a Miller hammer mill, 4 Universal screens, new conveyors, installing additional fans on their tunnel kiln, spending about \$70,000 all told.

Flat Rock (Mich.) Clay Products is busy doing things like this: rebuilding a 25' gas fired periodic; putting in Wing dryer exhaust fans; celebrating their 25th anniversary. All of this told to us by O. H. Reuttinger.

Not a brick operation, but clay, is Highlands Fire Clay Co., in St. Louis, Mo. area. Jack E. Thomas, general manager, says they're long-time readers of BCR, been furnishing high grade fire clays and shales to brick, sewer pipe, etc., since 1904. Thomas reports their output has increased to a total of 1500 tons per day (between two mines) with new equipment including a $\frac{3}{4}$ yd. Northwest shovel; TD-9 dozer and hi-lift; 4-wheel road scraper; other equipment too.

Joseph A. Brown, president of Baltimore Brick Co., sent us a couple of interesting items. One was a paper from Baltimore Junior College, telling about a brick booth built by engineering students. None are

studying to be bricklayers, but regard the bricklaying as part of the practical side of engineering. Brown also sent a copy of the Architect's Report—published by the Baltimore AIA chapter, first issue. Magazine ran a nice picture and tribute to Mr. Brown.

Miller Equipment To Expand, Add Line

Miller Equipment Co. has embarked on an expansion program that will enable the Salisbury, N. C., firm to supply buildings as well as kilns and related equipment.

A steel fabricating operation, working as a division, has been set up with Jim Odom to head the division. Boyd Miller, president, is in the process of acquiring land for the steel fabrication operation.

As soon as the division is in full operation, Miller Equipment will be able to handle the whole job of plant building, rather than just supplying such parts as kilns and machinery.

Boyd Miller expects that the company payroll will be about 60, double the present manpower.



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SEANOR Continued

In using the above formula the pump should be in good working order, and there should be no air leaks into the vacuum system.

The air being pumped per minute includes some volume of water-vapor since some moisture flashes into steam at the low pressures within a vacuum chamber under high vacuum. The absolute pressure is the reading of the vacuum gauge subtracted from the barometer reading, or it can be taken direct from an absolute pressure gauge if one is used instead of a vacuum gauge.

For illustration, suppose that the Barometer is 30"; that the pump has a capacity of 5 CFM; and that the air in the clay amounts to 5 Cu. Ft. per Minute.

Using the above data, in the formula, we want to know how much vacuum we could get in the vacuum chamber. Then let "x" represent the absolute pressure. Then: $\frac{x}{30} \times 5 = 5$ and "x" would be 30

30, which would be the absolute pressure in the vacuum chamber. Subtracting this from the barometer of 30, we find that 30 minus 30 is ZERO, and we would therefore get NO vacuum in the chamber with this small pump. The CFM pump is too small to do any good in this case.

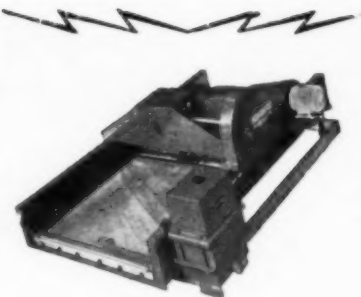
Again, for example, if the Barometer at the machine level is 30", and the clay releases 5 CFM of air per minute, and we install a pump that is rated at 60 CFM, letting "x" represent the absolute pressure, we have the following: $\frac{x}{30} \times 60 = 5$ Solving

the equation, "x", or the absolute pressure would be 2.5".

Subtracting this 2.5" from the barometer of 30" we would have 27.5" of vacuum inside the chamber or a vacuum gauge on this chamber would read 27.5".

Also, from the above formula, if we were to use a pump having a capacity of 100 CFM instead of the pump with 60 CFM capacity, "x" would be 1.5" and the 100 CFM pump would give us a reading on a vacuum gauge on the vacuum chamber of 28.5" (30 minus 1.5) A 200 CFM pump would give value for "x" as 0.75" and a 300 CFM pump would give "x" value as 0.5".

(Continued next month)



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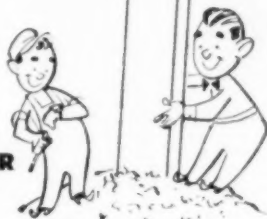
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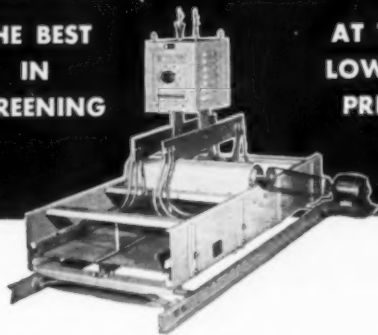


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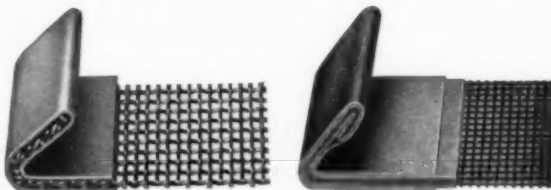
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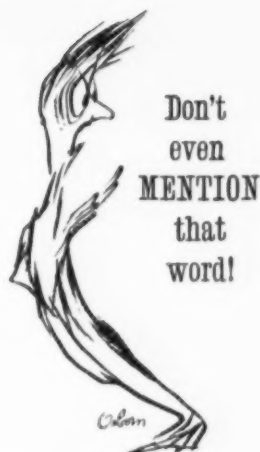
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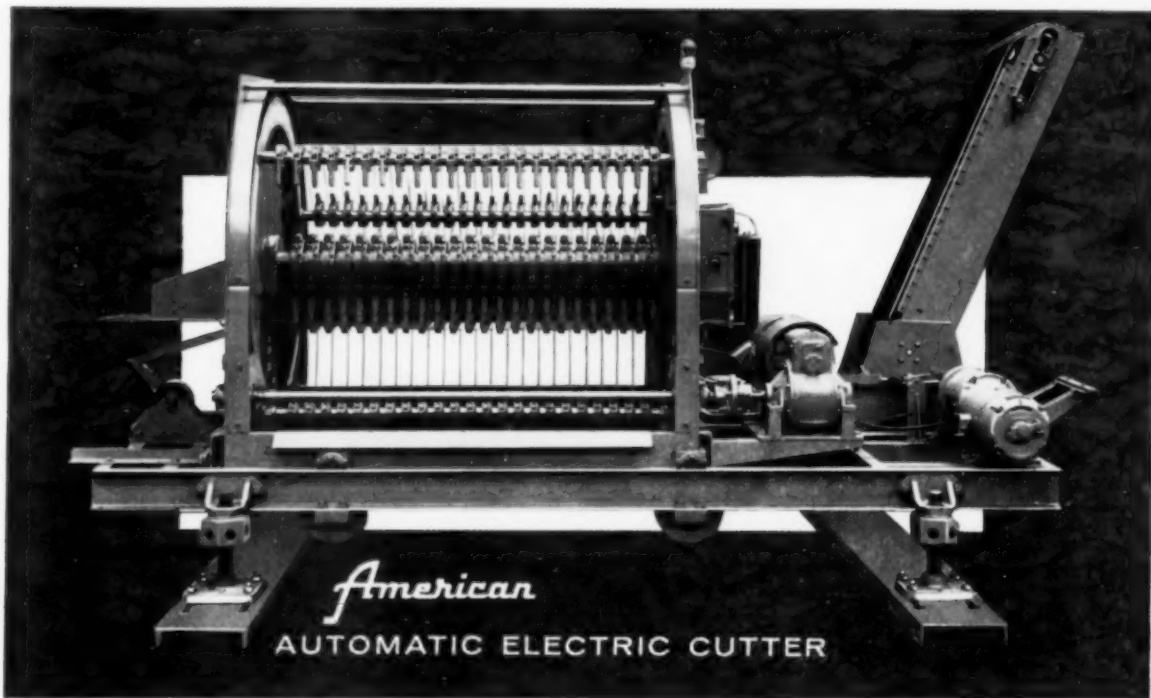
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